Soluciones de las Actividades del Estudiante

Capítulo 1

Página 3

1.

a) {7, 14, 21, 28 } b) { 3 } c) { -5, 1} d) {Mexicali, Tecate, Rosarito, Ensenada, Tijuana}

2.

a) $\{x \mid 0 > x > -4, x \in I\}$ b) $\{x \mid x^2 = 25, x \in R\}$ c) $\{x \mid x = 2n, n \in I\}$ d) $\{x \mid x = 6n, n \in I\}$

e) $\{x \mid x = 2n - 1, n \in N\}$

3.

a) {0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12} b) {0, 2, 6, 8, 10}

c) {0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12} d) ϕ

4.

a) {x | x pertenece a los números pares o impares} b) ϕ c) {2, 4 } d) { 1, 3, 5 } e) ϕ

5.

El conjunto A es igual al conjunto C El conjunto B es diferente al conjunto D

6.

$\{x \mid x = 2n, n \in I\}$

7.

$\{x \mid x = -(2n - 1), n \in N\}$

8.

$\{y \mid y = 2x + 3, x = 2,4,6\}$

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11.

a) Decimal finito	b) Decimal finito	c) Decimal finito
d) Decimal finito	e) Decimal infinito repetitivo	f) Decimal infinito no repetitivo
g) Decimal infinito no repetitivo	h) Decimal infinito no repetitivo	i) Decimal infinito no repetitivo
j) Decimal infinito repetitivo	k) Decimal finito	l) Decimal finito

12.

a) V	b) V	c) V	d) F

13.

a) Enteros	b) Reales	c) Irracionales	d) Enteros

Capítulo 2

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2.

a) 6 b) 4 c) 2 d) 2 e) 4 f) –7 g) 7 h) –12 i) 2
j) 3 k) 4a l) 7x m) –11x n) -2a+b ñ) 7y+2a o)6p+9q

4.

a) 7r+2u-4t b) –4p+a-r c) s-4i-m d) 4t-16u-6 e) 5s-5a-y
f) 4r+2e-7d

6.

a) 5a-2b+2c b) 2b-3a+5c c) 6c+2a d) 4a+3y e) 5s-t-2
f) –b-2a g) 3s+2t h) 0 i) 5x+3y j) –4x+4y

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8.

a) Asociativa b) Conmutativa c) Conmutativa d) Conmutativa e) Asociativa
f) Distributiva

9.

a) $-a$ b) $\frac{1}{c}$ c) $\frac{3}{c}+1$ d) $2z$ e) $\frac{13}{21}$

f) $\frac{-17}{28}$ g) $\frac{3\sqrt{2}+2}{6}$ h) $\frac{-69}{28}$ i) $\frac{41}{40}$ j) $\frac{5\sqrt{3}+1}{3}$

k) $\frac{19}{42}$ l) $\frac{-5\sqrt{2}}{6}+5$ m) $\frac{35-6\sqrt{3}}{15}$ n) $\frac{4a-3b}{4b}$ ñ) $\frac{22b-14}{7b}$

o) $\frac{3+14c}{21}$

Capítulo 3

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1.

a) $\frac{1}{8^2 3^3}$ b) 7^3 c) $4^4 x^3 y^2$ d) $\frac{1}{y^2}$

2.

a) 2^{-3} b) $\frac{x^{-4}}{y^{-3}}$ c) $\frac{x^{-5}}{2^{-1}}$ d) $\left(\frac{y}{3}\right)^{-3}$

3.

a) 81 b) $\frac{1}{27}$ c) $\frac{1}{81}$ d) -27 e) $\frac{-1}{81}$

f) 27 g) 49 h) $\frac{-32}{243}$ i) 243 j) $\frac{1}{49}$

k) 49 l) $\frac{-243}{32}$ m) $\frac{-1}{49}$ ñ) $\frac{32}{243}$ o) 1

p) –1 q) 1 r) –1 s) 1 t) 1

4.

a) 0 b) $\frac{1}{5}$ c) 65 d) 0 e) indeterminado

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5.

a) 13 b) 19 c) 11 d) $\frac{1}{6}$ e) $\frac{-7}{6}$ f) $\frac{-5}{6}$

6.

a) x^8 b) 2^{22} c) $-21x^6$ d) $-15x^3y$ e) 2^5 f) 3^6

g) $\frac{1}{10^{11}}$ h) $\frac{-5y^9}{3x^4}$ i) $25x^2$ j) $-64x^3$ k) $\frac{1}{x^{20}}$ l) $\frac{64x^6}{y^3}$

m) $\frac{1}{9x^4y^8}$ n) x ñ) $-x^3y^4$ o) $49ab$ p) $\frac{9y^9}{x}$ q) $\frac{b^7}{a^4}$

r) a^6b^{10} s) $-x^2y^4z^6$ t) $\frac{27a^5b^7c}{4}$

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7.

a) $3\sqrt{2}$ b) $3\sqrt{5}$ c) $4\sqrt{3}$ d) $6\sqrt{2}$ e) $5\sqrt{3}$ f) $8\sqrt{2}$

g) $9\sqrt{2}$ h) $8\sqrt{5}$ i) $2\sqrt[3]{2}$ j) $4\sqrt[3]{7}$ k) $2\sqrt[4]{2}$ l) $4\sqrt[4]{2}$

8.

a) 7 b) x^3 c) x^2y d) $9x^5$ e) $-3\sqrt[3]{4}$ f) $4\sqrt[3]{5}$

g) 4 h) x^3y^2m i) n^2p j) $2mn^2\sqrt[3]{2}$

9.

a) $x^2y^4\sqrt{7}$ b) $3m^3\sqrt{2m}$ c) $nk^3\sqrt[3]{6}$ d) $2a^2d\sqrt[3]{2d}$ e) $3a^4\sqrt{5a}$ f) $5ab\sqrt[4]{ab^3}$

g) $\frac{a}{b^2}\sqrt{\frac{3a}{5}}$ h) $\frac{1}{5n^2}\sqrt[3]{\frac{2m^2}{n}}$

10.

a) $8\sqrt{a}$ b) $13\sqrt{3}$ c) $-20\sqrt[3]{2}$ d) $12\sqrt{2}$ e) $2\sqrt{2}$ f) $20\sqrt{2}$

g) $-\frac{2}{3}\sqrt{2}$ h) $\sqrt{3}(2+\sqrt{7})$ i) $\frac{53}{15}\sqrt{3}$

11.

a) 4 b) 12 c) 6 d) 3 e) 3 f) 3 g) 2 h) $\frac{1}{4\sqrt{2}}$

12.

a) $\sqrt{10}(1-2x^2+3x^2y^4)$ b) $x\sqrt[3]{x}(2+y)$ c) rs d) $2xyz$ e) $2ab^4\sqrt{3a}$

f) $a\sqrt{7}$ g) $\frac{a^2}{b^2}\sqrt{\frac{5}{2}}$ h) $\frac{7n^2}{p}\sqrt{\frac{7}{5p}}$ i) $2a^2b^4$

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13.

a) $\frac{7}{3\sqrt{7}}$ b) $\frac{3}{\sqrt{2}\sqrt{3}}$ c) $\frac{3}{7(\sqrt{5}+\sqrt{2})}$ d) $\frac{1}{3(\sqrt{7}-\sqrt{5})}$ e) $\frac{2}{17+5\sqrt{11}}$ f) $\frac{-1}{5(2+\sqrt{5})}$

14.

a) $\frac{3\sqrt{7}}{7}$ b) $\frac{\sqrt{6}}{2}$ c) $\frac{\sqrt{5}+\sqrt{3}}{2}$ d) $\frac{3(\sqrt{8}-\sqrt{3})}{5}$ e) $-5(2+\sqrt{5})$ f) $\frac{17-5\sqrt{11}}{7}$

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15.

a) $\frac{\sqrt{a}}{b^2}$ b) $\frac{x^{5/12}}{y}$ c) $\frac{\sqrt[5]{3}x^{3/20}}{y^{1/15}}$ d) $x^{9/4}$ e) $-2^{5/6}$

16.

a) $(ab)^{1/3}$ b) $\frac{1}{x^{4/3}}$ c) $(7x)^{1/5}$ d) $\frac{1}{a^{3/4}}$ e) $(x+y)^{1/7}$ f) $(a^2+b^2)^{1/3}$

g) $(x+x^{1/2})^{1/2}$ h) $(x^2+y^2)^{1/2}$

17.

a) $\sqrt[3]{a^2}$ b) $2\sqrt[3]{a}$ c) $\sqrt[3]{9a^2}$ d) $2\sqrt[3]{a^2}$ e) $3+\sqrt[3]{a^2}$ f) $\sqrt[3]{(3+a)^2}$

g) $\frac{3}{\sqrt[3]{a^2}}$ h) $\frac{1}{\sqrt{27a^3}}$

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18.

a) 7 b) -2 c) $\sqrt{(0.04)^7}$ d) $\frac{1}{16}$ e) 16 f)2187

g) $\frac{1}{(-3)^7}$ h) $\frac{\sqrt{2}}{9}$

19.

a) $21w^4$ b) $4a^{13/6}$ c) $x^{7/8}$ d) $8a$ e) $a^{1/2}b$ f) $\frac{1}{1000x^6}$

g) $125(xy^3)^{1/2}$ h) $\frac{2x^2}{y^3}$ i) $\left(\frac{c}{d}\right)^{2/3}$ j) $2x^{1/6}$ k) $\frac{-1}{y}$ l) $\frac{9a^2}{b^4}$

20.

a) 2 b) $\sqrt[8]{a^3}$ c) $\sqrt[4]{x^3}$ d) $\sqrt[4]{x^7}$

21.

a) $30a^2bc\sqrt{2c}$ b) $6x^2y^2\sqrt[3]{15x^2y}$ c) $2a\sqrt[4]{5ab^3}$ d) $a^2\sqrt[6]{3^5(4)a}$ e) $\left(7^4(8)m^7\right)^{1/12}$

f) $(3s^5)^{1/4}$ g) $\sqrt{2x}$

22.

a) $\frac{x^2}{2z}\left(16x^3y^2z^4\right)^{1/5}$ b) $\frac{3m(4mnp)^{3/4}}{4np}$ c) $\frac{(x-y)(x+y)^{1/2}}{3x}$ d) $-\frac{(x+\sqrt{x^2+y^2})^2}{y^2}$

Capítulo 4

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1.

a) no es polinomio b) Polinomio de grado 18 y coeficiente principal –17
c) no es polinomio d) Polinomio de grado 4 y coeficiente principal 1

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2.

a) $2a^2+3ab-2b^2$ b) $-4x^2+9xy+9y^2$ c) $8x^2+10ax-3a^2$
d) $a^3-a^2b-7ab^2-2b^3$ e) $-2x^2+3xy+9y^2$ f) $6a^2+7ab-20b^2$
g) $2a^3-5a^2b+b^3$ h) $6x^3-19x^2y+7xy^2+2y^3$ i) $4x^3-12x^2y+7xy^2-5y^3$
j) $a^5+a^4-3a^3+3a-2$ k) $x^4-x^2y^2-2xy^3-y^4$

3.

a) $2x-3$ b) $z-3$ c) $2w-1$ d) $3y+2$ e) $t+2$ f) $2x^3-3x^2-4x+2$

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4.

a) $3a-b$ b) $5x-2y$ c) $a-b$ d) a^2-ab+b^2 e) $5x-a+3t$ f) $x+2y$

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5.

a) x^2+x-2 b) $8m^2-16mn+6n^2$
c) $x^2+4xy+4y^2$ d) $4b^2-20br+25r^2$
e) $9h^2-12hk+4k^2$ f) $25y^2-4x^2$
g) $(20-3)(20+3)=400-9=391$ h) $(40+4)(40-4)=1600-16=1584$
i) $(70+5)(70-5)=4900-25=4875$ j) $(40-5)(40+5)=1600-25=1575$
k) $(70+3)(70-3)=4900-9=4891$ l) $(70-2)(70+2)=4900-4=4896$
m) $25b^8-9x^4$ n) $x^2+2xy+y^2+2yz+z^2+2xz$
ñ) $m^2-2mn+n^2+2mt+t^2-2nt$ o) $a^2+2ab+b^2-2ac+c^2-2bc$
p) $a^2-2ab+b^2+6ak+9k^2-6bk$ q) $4a^4-16a^3+20a^2-8a+1$
r) $64-16m+m^2+16r+r^2-2mr$

6.

a) $21x^2-23x-20$ b) $15a^4b^3-5a^3b^4+20a^2b^5$ c) $3x^4+20x^3-8x^2+37x-10$
d) $8x^3+12x^2+6x+1$ e) $27x^3-54x^2+36x-8$ f) $24x^3+18x^2y-7xy^2+10y^3$

7.

a) $\frac{2x^2}{9}+\frac{xy}{3}+\frac{y^2}{8}$

b) $\frac{10}{x^2}-\frac{23}{6}+\frac{x^2}{3}$

c) $\frac{x^2}{16}-\frac{9y^2}{4}$

d) $\frac{m^4}{9}-\frac{4n^4}{25}$

e) $\frac{9m^4}{16}-\frac{4n^8}{9}$

f) $\frac{m^4}{9}-\frac{4}{25m^2}$

g) $\frac{25a^2}{x^2}-\frac{y^2}{4b^2}$

h) $\frac{9a^4}{b^2}-\frac{25x^2}{16y^2}$

i) $m^6+2m^5-3m^4-2m^3+6m^2-4m+1$

j) $4x^6-4x^5+17x^4-20x^3+22x^2-24x+9$

k) $6(a+b)^2-5(a+b)-6$

l) $15(2a-b)^2-26(2a-b)-21$

m) $12(4a-c)^2+5(4a-c)-25$

n) $21(2y+3b)^2+28(2y+3b)-49$

ñ) $(x^2-2)^2-x^2$

o) $(a^2+3)^2-a^2$

p) $(3b^2+c^2)^2-9b^2c^2$

q) $(3u^2+9v^2)^2-81u^2v^2$

r) $(m^3+m)^2-(m^2+1)^2$

s) $(a^3-a)^2-(a^2-3)^2$

t) $(3b^4-b)^2-(b^3-2b^2)^2$

u) $(2m^5+m^3)^2-(m^4+1)^2$

Capítulo 5

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1.

a) $2x(6x^2+x+3)$

b) $3xy(2x^2y^3-\sqrt{3}xy-x+1)$

c) $(y+3)(2y-z)$

d) $xy^3(6x^4y^2+\sqrt{2}x+14)$

e) $(5a+b)(3t+5)$

f) $3a^2b(b^2-\sqrt{2}a^2b+3)$

g) $xyz(z^2-y^2+x^2)$

h) $(x^2+2)(x+1)$

i) $(p^2+1)(2p-1)$

2.

a) $(6x-5)(6x+5)$

b) $(a-2b)(a+2b)$

c) $(2xy-1)(2xy+1)$

d) $(7x-8y)(7x+8y)$

e) $(x-y)(x+y)(x^2+y^2)$

f) $(x^2+y^2)(x^4-x^2y^2+y^4)$

g) $(x-y)(x+y)(x^2+y^2)(x^4+y^4)$

h) $(a-4b)(a^2+4ab+16b^2)$

i) $(2xy^2+3)(4x^2y^4-6xy^2+9)$

j) $(y^3+5)(y^6-5y^3+25)$

k) $(y^2-1)(y^4+y^2+1)$

l) $(1-m)(1+m+m^2)$

3.

a) $(x-3)(x-2)$

b) $(x-6)(x-4)$

c) $(y+5)(y+2)$

d) $(y^2+3)(y^2+7)$

e) $(x-2)(x+2)(x^2+1)$

f) $(x+6)(x-2)$

g) $(r+1)^2$

h) $(r+7)(r-2)$

i) $(x-2y)(x+y)$

j) $(x-3y)(x-y)$

k) $(r-4t)^2$

l) $(3m-n)^2$

m) $(2p+5)(p+1)$

n) $(4q+3)(2q-1)$

ñ) $\left(\sqrt{5}b-2\right)\left(\sqrt{5}b+2\right)\left(\sqrt{2}b-\sqrt{3}\right)\left(\sqrt{2}b+\sqrt{3}\right)$

o) $(2x-y)(x-3y)$

p) $\left(\sqrt{6}a-\sqrt{5}\right)\left(\sqrt{6}a+\sqrt{5}\right)\left(a^2+3\right)$

q) $(-3x+4y)(x+3y)$

r) $\left(\sqrt[3]{3}m^{2/3}+2h\right)\left(3^{2/3}m^{4/3}-2h\sqrt[3]{3}m^{2/3}+4h^2\right)$

s) $\left(5h^2-\sqrt{7}x^{3/2}\right)\left(5h^2+\sqrt{7}x^{3/2}\right)$

4.

a) $[x^2+y^2][(x^2+1)^2-(x^2+1)\ (y^2-1)\ +(y^2-1)^2]$

b) $[(4-x^2)-(4-y^2)][(4-x^2)^2+(4-x^2)(4-y^2)+(4-y^2)^2]$

c) $(x-y)^2$

d) $-(y^2-x^2)$

e) $[(1-x^2)-(1-y^2)][(1-x^2)^2+(1-x^2)(1-y^2)+(1-y^2)^2]$

f) $[(x^2-4)+(4-y^2)][(x^2-4)^2-(x^2-4)(4-y^2)+(4-y^2)^2]$

g) $(1-16m)(1+16m)$

h) $(r-3)(r+3)(r^2+9)(r^4+81)$

i) $(x+2)(x^2-2x+4)(x-1)(x^2+x+1)$

j) $(m^5-3)(m^5-2)$

k) $(rs-2t)(r^2s^2+2rst+4t^2)$

l) $(5cd-xy^2)(5cd+xy^2)$

m) $[(p+q)^2)](p-q)$

n) $(4x-y)(x+2y)$

ñ) $(6x+y)^2$

5.

a) $(x-\sqrt{13})(x+\sqrt{13})$

b) $(\sqrt{2}m-1)(\sqrt{2}m+1)$

c) $(\sqrt{5}m-1)(\sqrt{5}m+1)$

d) $\left(\frac{1}{2}a-b\right)\left(\frac{1}{2}a+b\right)$

e) $\left(x+\frac{1}{2}\right)^2$

f) $\left(m-\frac{1}{5}\right)^2$

g) $(\sqrt{3}m-2r)(\sqrt{3}m+2r)$

h) $(2\sqrt{6}-n)(2\sqrt{6}+n)$

i) $(x-\sqrt{2}y)^2$

6.

a) $\left(\frac{m}{2}-\frac{3}{n}\right)^2$

b) $\left(\frac{x}{5}-\frac{y}{2}\right)^2$

c) $\left(\frac{3}{5}a+\frac{2}{3}c\right)^2$

d) $5[(x+3y)(x+y)]$

e) $(6h+k)(h-5k)$

f) $(5a-2b)(a+3b)$

g) $(c+x)(c+d)$

h) $(m-3a)(3m-1)$

i) $(x^2-3y)(4ax-1)$

j) $(4x-1)(x^2+1)$

k) $(s^2-3r)(2z-1)$

l) $(3u-2v)(1+x^4)$

m) $(m+n)(m^6-m^5n+m^4n^2-m^3n^3+m^2n^4-mn^5+n^6)$

n) $(m-n)(m^6+m^5n+m^4n^2+m^3n^3+m^2n^4+mn^5+n^6)$

ñ) $(p-q)(p^{10}+p^9q+p^8q^2+p^7q^3+p^6q^4+p^5q^5+p^4q^6+p^3q^7+p^2q^8+pq^9+q^{10})$

Capítulo 6

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1.

a) $(r+2)^2(r+3)^3$

b) $(x+2)(x-1)$

c) $(v+1)^2(v-4)$

d) $b^2(b+3)(b-2)(b-6)$

e) $(x-5)^2(x+5)^2$

f) $m(m+1)^2(m-1)$

g) $(p+r)^2(p^2-pr+r^2)$

h) $x^2(x-1)(x+1)^2$

i) $y(3y+1)(y-5)$

2.

a) $-\dfrac{1}{x(x+h)}$ b) $\dfrac{5x^2-4x}{2(x-1)^{1/2}}$ c) $\dfrac{uv}{u+v}$ d) $\dfrac{x+1}{x+4}$ e) $\dfrac{x-3}{x^2-3x+9}$

f) $\dfrac{v^2+2}{2-v^2}$ g) $\dfrac{x+y}{x-y}$ h) $\dfrac{3x+5}{2x+3}$ i) $\dfrac{2y+5}{y(y-1)}$ j) $\dfrac{w+3}{w-3}$

k) $\dfrac{ab}{a-b}$

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3.

a) 1 b) $\dfrac{1}{2-s}$ c) $\dfrac{7z+1}{7z-1}$ d) $\dfrac{2x^2-2x+5}{x^2-1}$ e) $\dfrac{5b^2}{(2b+1)(b-2)}$

f) $\dfrac{y^2+x^2}{y^2-x^2}$ g) 0 h) $\dfrac{r^2-4r+2}{r^2-r-12}$ i) $\dfrac{3a}{a^2-4}$ j) $\dfrac{2(w+1)}{w+3}$

k) $\dfrac{6-8x}{2x^2+3x-2}$ l) $\dfrac{4z^3+13z^2+z-8}{(z-1)(2z+3)(4z+1)}$ m) $\dfrac{t^2+t-20}{t^2+t-6}$ n) $\dfrac{(x+1)}{x(x-1)}$ ñ) $\dfrac{x^2-1}{x^2+x+1}$

o) $\dfrac{(p+4)^2}{p-p^2}$ p) $\dfrac{1}{3(x-2)}$ q) $\dfrac{x+4}{x+2}$ r) $\dfrac{w+7}{w+2}$ s) $\dfrac{3w^2+w}{2w^2-7w-4}$

t) $\dfrac{x^2}{x^2+9x+20}$ u) $\dfrac{2x^2-5x-3}{(x+1)^2}$ v) $\dfrac{q+1}{q-4}$ w) $\dfrac{x-1}{x-4}$ x) $\dfrac{s^2-s-6}{-s^2+7s-10}$

y) $\dfrac{x}{y}$

4.

a) $\dfrac{1-x^3}{1+x^3}$ b) $\dfrac{t+s}{t-s}$ c) $\dfrac{z}{2}$ d) $\dfrac{1}{2r^2-2r+1}$

e) $-\dfrac{1}{a}$ f) $\dfrac{xy}{x-y}$ g) $-\dfrac{2x+h}{x^2(x+h)^2}$ h) $\dfrac{-2}{(2x+2h+1)(2x+1)}$

i) $\dfrac{ab}{b-a}$ j) ab k) $\dfrac{v^2-u^2}{u^4v^4}$ l) $\dfrac{1}{u^2v^2}$

m) $\dfrac{\sqrt{w}+\sqrt{u}}{\sqrt{uw}}$ n) $\dfrac{v\sqrt{v}-z\sqrt{z}}{\sqrt{zv}}$ ñ) $\dfrac{\sqrt{y}\left(\sqrt{x}+1\right)}{\sqrt{x}\left(\sqrt{y}+1\right)}$

Capítulo 7

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1.

a) $\dfrac{\pi}{4}=45^0$ b) $\dfrac{\pi}{3}=60^0$ c) $\dfrac{-5\pi}{2}=-450^0$ d) $-2\ \pi=-360^0$ e) $\dfrac{-\pi}{12}=-15$ f) $\dfrac{\pi}{18}=10$

2.

a) $\dfrac{5\pi}{6}$ b) $\dfrac{7\pi}{4}$ c) $-\dfrac{2\pi}{3}$ d) $-\dfrac{2\pi}{9}$ e) $\dfrac{\pi}{10}$ f) $\dfrac{11\pi}{6}$

Capítulo 8

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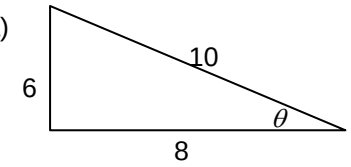
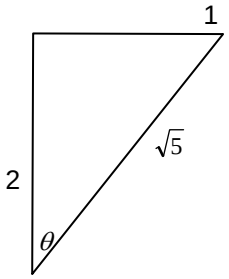
1. a)



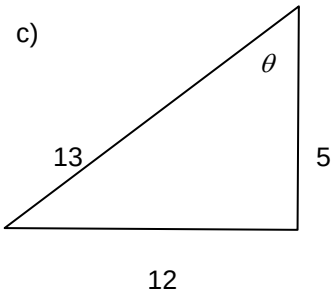
$Sen\theta = \frac{3}{5}$	$\csc\theta = \frac{5}{3}$
$\cos\theta = \frac{4}{5}$	$\sec\theta = \frac{5}{4}$
$\tan\theta = \frac{3}{4}$	$\cot\theta = \frac{4}{3}$

b)



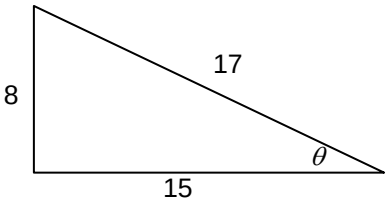
$sen\theta = \frac{1}{\sqrt{5}}$	$\csc\theta = \sqrt{5}$
$\cos\theta = \frac{2}{\sqrt{5}}$	$\sec\theta = \frac{\sqrt{5}}{2}$
$\tan\theta = \frac{1}{2}$	$\cot\theta = 2$

c)



$sen\theta = \frac{12}{13}$	$\csc\theta = \frac{13}{12}$
$\cos\theta = \frac{5}{13}$	$\sec\theta = \frac{13}{5}$
$\tan\theta = \frac{12}{5}$	$\cot\theta = \frac{5}{12}$

d)



$sen\theta = \frac{8}{17}$	$\csc\theta = \frac{17}{8}$
$\cos\theta = \frac{15}{17}$	$\sec\theta = \frac{17}{15}$
$\tan\theta = \frac{8}{15}$	$\cot\theta = \frac{15}{8}$

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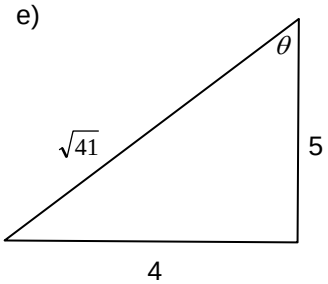
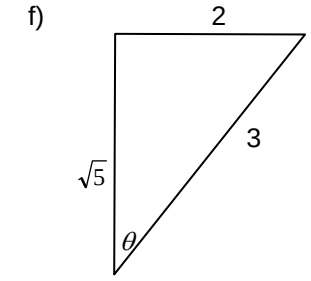
e)



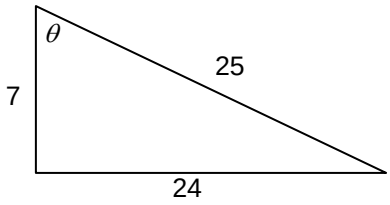
$sen\theta = \frac{5}{\sqrt{41}}$	$\csc\theta = \frac{\sqrt{41}}{5}$
$\cos\theta = \frac{4}{\sqrt{41}}$	$\sec\theta = \frac{\sqrt{41}}{4}$
$\tan\theta = \frac{5}{4}$	$\cot\theta = \frac{4}{5}$

f)



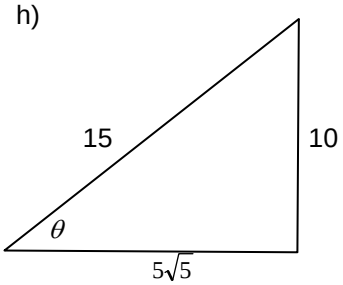
$sen\theta = \frac{2}{3}$	$\csc\theta = \frac{3}{2}$
$\cos\theta = \frac{\sqrt{5}}{3}$	$\sec\theta = \frac{3}{\sqrt{5}}$
$\tan\theta = \frac{2}{\sqrt{5}}$	$\cot\theta = \frac{\sqrt{5}}{2}$

g)



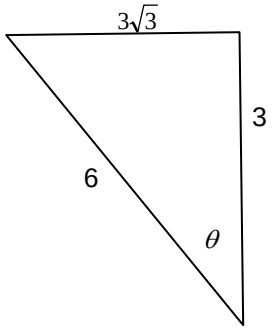
$sen\theta = \frac{24}{25}$	$\csc\theta = \frac{25}{24}$
$\cos\theta = \frac{7}{25}$	$\sec\theta = \frac{25}{7}$
$\tan\theta = \frac{24}{7}$	$\cot\theta = \frac{7}{24}$

h)



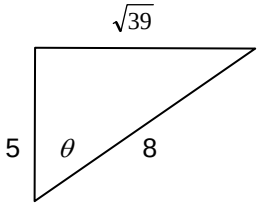
$sen\theta = \frac{2}{3}$	$\csc\theta = \frac{3}{2}$
$\cos\theta = \frac{\sqrt{5}}{3}$	$\sec\theta = \frac{3}{\sqrt{5}}$
$\tan\theta = \frac{2}{\sqrt{5}}$	$\cot\theta = \frac{\sqrt{5}}{2}$

i)



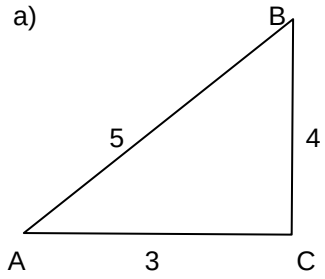
$sen\theta = \frac{\sqrt{3}}{2}$	$\csc\theta = \frac{2}{\sqrt{3}}$
$\cos\theta = \frac{1}{2}$	$\sec\theta = 2$
$\tan\theta = \sqrt{3}$	$\cot\theta = \frac{1}{\sqrt{3}}$

j)



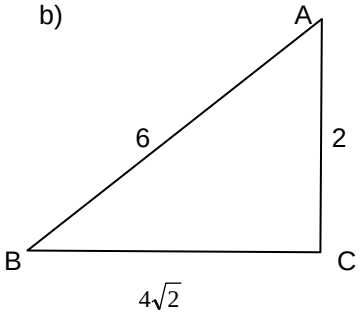
$sen\theta = \frac{5}{8}$	$\csc\theta = \frac{8}{5}$
$\cos\theta = \frac{\sqrt{39}}{8}$	$\sec\theta = \frac{8}{\sqrt{39}}$
$\tan\theta = \frac{5}{\sqrt{39}}$	$\cot\theta = \frac{\sqrt{39}}{5}$

2. a)



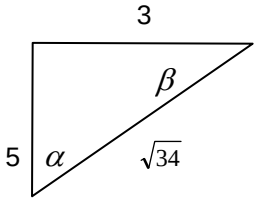
$senA = \frac{4}{5}$
$\cos B = \frac{4}{5}$

b)



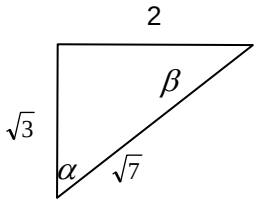
$senA = \frac{2\sqrt{2}}{3}$
$\cos B = \frac{2\sqrt{2}}{3}$

3. a)



$\tan\alpha = \frac{3}{5}$
$\cot\beta = \frac{3}{5}$

b)



$\tan\alpha = \frac{2}{\sqrt{3}}$
$\cot\beta = \frac{2}{\sqrt{3}}$

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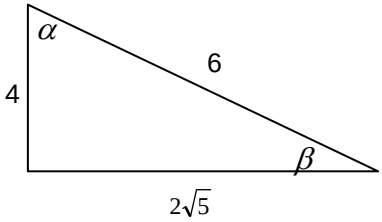
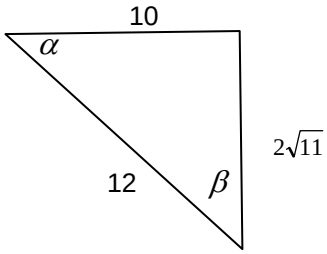
c)



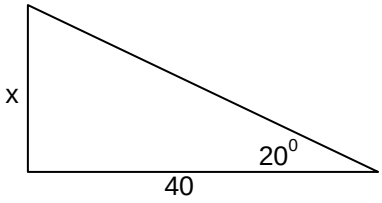
$\tan\alpha = \frac{\sqrt{5}}{2}$
$\cot\beta = \frac{\sqrt{5}}{2}$

d)



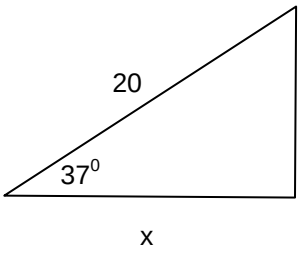
$\tan\alpha = \frac{\sqrt{11}}{5}$
$\cot\beta = \frac{\sqrt{11}}{5}$

4. a)



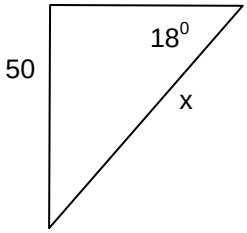
$\tan 20 = \frac{x}{40}$
$x = 14.55$

b)



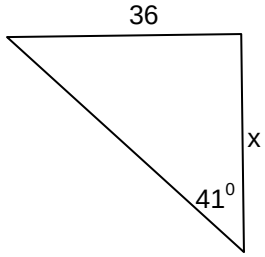
$\cos 37 = \frac{x}{20}$
$x = 15.97$

c)



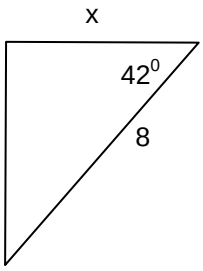
$sen18 = \frac{50}{x}$
$x = 161.80$

d)



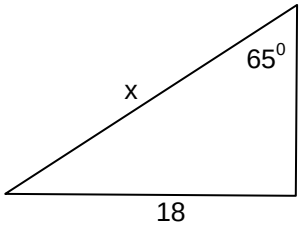
$\tan 41 = \frac{36}{x}$
$x = 41.41$

e)



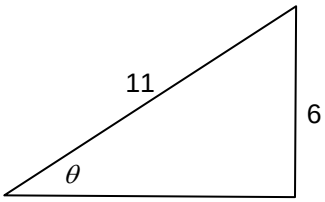
$\cos 42 = \frac{x}{8}$
$x = 5.94$

f)



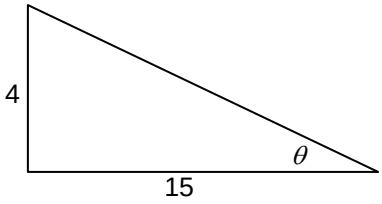
$sen65 = \frac{18}{x}$
$x = 19.86$

5. a)



$sen\theta = \frac{6}{11}$
$\theta = 33$

b)



$\tan\theta = \frac{4}{15}$
$\theta = 15$

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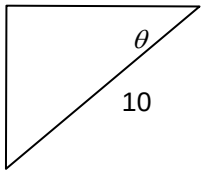
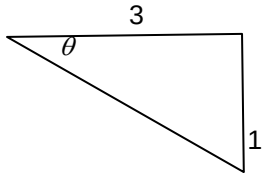
c)



$\cos\theta = \frac{8}{10}$
$\theta = 37$

d)



$\tan\theta = \frac{1}{3}$
$\theta = 18$

6.

a) $sen123 = 0.8386$ b) $\cos 212 = -0.8480$ c) $\tan 351 = -0.1583$ d) $\cos 317 = 0.7313$

e) $\sec 225 = -\sqrt{2}$ f) $\csc 330 = -2$ g) $\cos 158 = -0.9271$ h) $sen204 = -0.4067$

i) $\tan 111 = -2.6050$ j) $\cot 249 = 0.3838$ k) $\sec 150 = -\frac{2}{\sqrt{3}}$ l) $\csc 240 = -\frac{2}{\sqrt{3}}$

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7.

a) $\theta = 26^0$ b) $\theta = 41^0$ c) $x = 55^0$ d) $x = 9^0$

e) $\theta = 73^0$ f) $x = 67^0$ g) $x = 74^0$ h) $\theta = 42^0$

8.

a) x = 15.04 p b) x = 8.15 m c) x = 55.53 p d) x = 380.57 m

e) x = 39.16 p f) x = 52.63 pies g) Ap = 341.925 cm^2 h) Ap = $150\sqrt{3}$ $pulg^2$

i) v = 8.74 km/h j) v = 4.04 mi/hr

Capítulo 9

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1.

a) 30^0 b) 45^0 c) 60^0 d) -450^0 e) -240^0 f) -330^0

g) 270^0 h) -72^0 i) $\frac{540}{\pi}$ j) $\frac{900}{\pi}$ k) $\frac{-360}{\pi}$ l) -360

2.

a) $\frac{5\pi}{6}$ b) $\frac{7\pi}{4}$ c) $\frac{-2\pi}{3}$ d) $\frac{-3\pi}{2}$ e) $\frac{\pi}{10}$ f) $\frac{5\pi}{9}$

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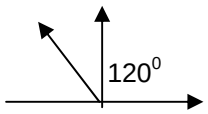
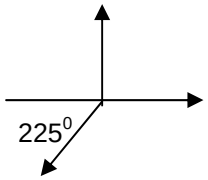
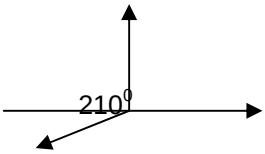
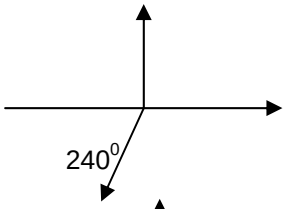
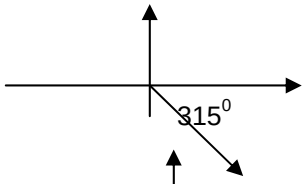
3.

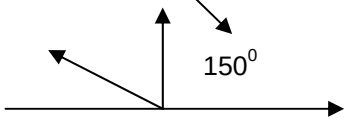
a) 

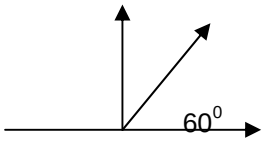
b) 

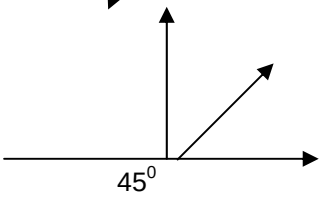
c) 

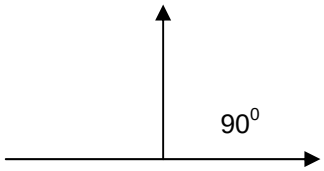
d) 

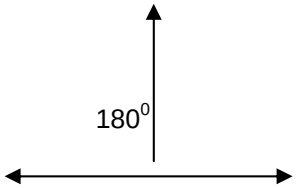
e) 

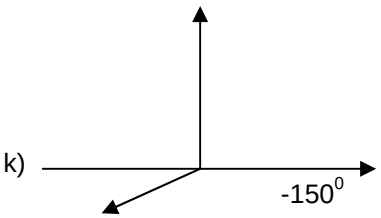
f) 

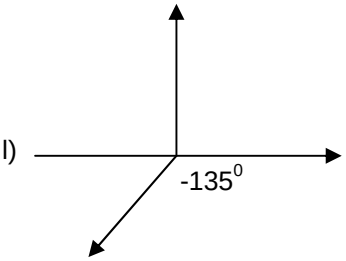
g) 

h) 

i) 

j) 

k) 

l) 

4.

a) $\frac{1}{2}$ b) $\frac{-\sqrt{2}}{2}$ c) $\sqrt{3}$ d) $\frac{-1}{2}$ e) -1

f) -1 g) Indefinido h) Indefinido i) $-\sqrt{2}$ j) $\frac{-2\sqrt{3}}{3}$

k) 0 l) 0 m) -1 n) -2 ñ) $\frac{1}{2}$

o) $\frac{1}{2}$ p) $-\sqrt{2}$ q) $\frac{1}{2}$

5.

a) $\frac{1}{\cos\theta}=\frac{3}{2}$ b) $\frac{-1}{sen\theta}=\frac{7}{3}$ c) $sen\theta=\frac{-1}{3}$ d) $\tan\theta=\frac{-1}{4}$

e) $\cos\theta=\frac{-4}{5}$ f) $sen\theta=\frac{-3}{5}$ g) $\cos\theta=\frac{3}{\sqrt{10}}=\frac{3\sqrt{10}}{10}$ h) $sen\theta=\frac{5}{\sqrt{26}}=\frac{5\sqrt{26}}{26}$

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6.

θ	$sen\theta$	$\cos\theta$	$\tan\theta$
0	0	1	0
$\frac{\pi}{6}$	$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{3}}{3}$
$\frac{\pi}{4}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{2}}{2}$	1
$\frac{\pi}{3}$	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$	$\sqrt{3}$
$\frac{\pi}{2}$	1	0	Ind.
$\frac{2\pi}{3}$	$\frac{\sqrt{3}}{2}$	$-\frac{1}{2}$	$-\sqrt{3}$
$\frac{3\pi}{4}$	$\frac{\sqrt{2}}{2}$	$-\frac{\sqrt{2}}{2}$	-1
$\frac{5\pi}{6}$	$\frac{1}{2}$	$-\frac{\sqrt{3}}{2}$	$-\frac{\sqrt{3}}{3}$
π	0	-1	0

θ	$\sec\theta$	$\csc\theta$	$\cot\theta$
0	1	Ind.	Ind.
$\frac{\pi}{6}$	$\frac{2\sqrt{3}}{3}$	2	$\sqrt{3}$
$\frac{\pi}{4}$	$\sqrt{2}$	$\sqrt{2}$	1
$\frac{\pi}{3}$	2	$\frac{2\sqrt{3}}{3}$	$\frac{\sqrt{3}}{3}$
$\frac{\pi}{2}$	Ind.	1	0
$\frac{2\pi}{3}$	-2	$\frac{2\sqrt{3}}{3}$	$\frac{-\sqrt{3}}{3}$
$\frac{3\pi}{4}$	$-\sqrt{2}$	$\sqrt{2}$	-1
$\frac{5\pi}{6}$	$-\frac{2\sqrt{3}}{3}$	2	$-\sqrt{3}$
π	-1	Ind.	Ind.

θ	$sen\theta$	$\cos\theta$	$\tan\theta$
$\frac{7\pi}{6}$	$\frac{-1}{2}$	$\frac{-\sqrt{3}}{2}$	$\frac{\sqrt{3}}{3}$
$\frac{5\pi}{4}$	$\frac{-\sqrt{2}}{2}$	$\frac{-\sqrt{2}}{2}$	1
$\frac{4\pi}{3}$	$\frac{-\sqrt{3}}{2}$	$\frac{-1}{2}$	$\sqrt{3}$
$\frac{3\pi}{2}$	-1	0	Ind.
$\frac{5\pi}{3}$	$\frac{-\sqrt{3}}{2}$	$\frac{1}{2}$	$-\sqrt{3}$
$\frac{7\pi}{4}$	$\frac{-\sqrt{2}}{2}$	$\frac{\sqrt{2}}{2}$	-1
$\frac{11\pi}{6}$	$\frac{-1}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{-\sqrt{3}}{3}$
2π	0	1	0

Capítulo 10

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1.

a) C = 65^0 b = 6.98 c = 11.04 b) C = 65^0 a = 13.04 b = 7.59
c) C = 72^0 B = 36^0 c = 24 d) a = 24.05 B = 72^0 C = 36^0
e) A = 36^0 B = 62^0 C = 82^0 f) No es posible construir el triángulo
g) A = 45^0 a = 26.77 b = 35.57 h) A = 118^0 B = 45^0 C = 17^0
i) a = 15 B = 13^0 C = 29^0

2.

a) y = 1.77 km b) y = 19.30 mi
c) a = 95.4 pies b = 86.1 pies h = 80.81 pies

Capítulo 11

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1.

a) $d = 2\sqrt{5}$ $pm = (3,3)$ b) $d = \sqrt{52}$ $pm = (0,0)$

c) $d = \frac{\sqrt{281}}{4}$ $pm = \left(-\frac{1}{8}, -1\right)$ d) $d = \frac{\sqrt{41}}{4}$ $pm = \left(-\frac{3}{8}, \frac{5}{2}\right)$

2.

a) Es triángulo rectángulo b) Es triángulo isósceles

3.

a) Son colineales b) No son colineales c) No son colineales

4.

a) x = 3 y x = -3 b) x = 6 y x = -2

5.

a) $y = \sqrt{55}$ y $y = -\sqrt{55}$ b) $y = 9$ y $y = -7$

Capítulo 12

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1.

a) $m = 2$ b) $m = -\frac{9}{5}$ c) $-\frac{9}{2}$

2.

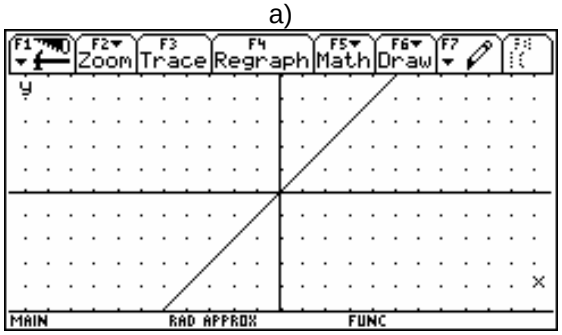
a) Son perpendiculares b) Son paralelas
c) Son perpendiculares d) Son perpendiculares

3.

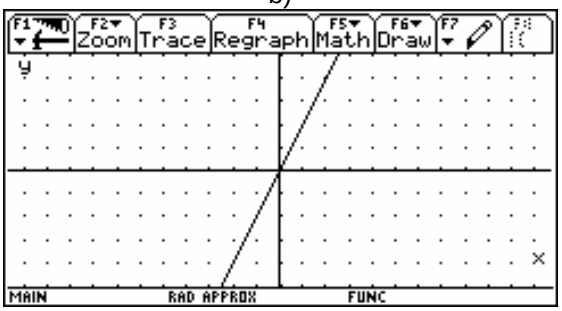
a) $y - 6x + 15 = 0$ b) $y + 3x - 1 = 0$ c) $y = 5$ d) $3y + 2x + 16 = 0$ e) $y + 2x + 4 = 0$

4.

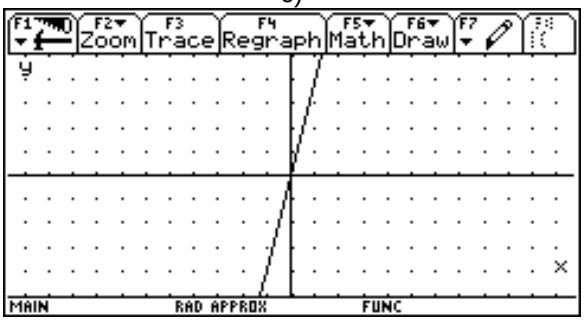
a)


F1 F2 Zoom F3 Trace F4 Regraph F5 Math F6 Draw F7
y
MAIN RAD APPROX FUNC

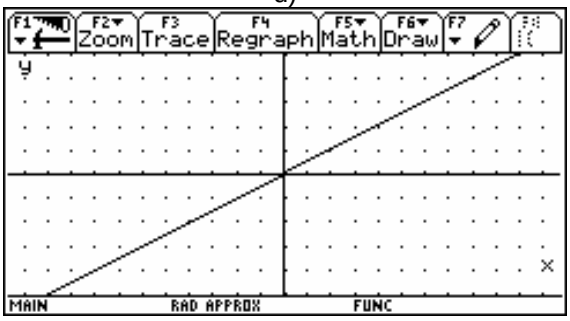
b)


F1 F2 Zoom F3 Trace F4 Regraph F5 Math F6 Draw F7
y
MAIN RAD APPROX FUNC

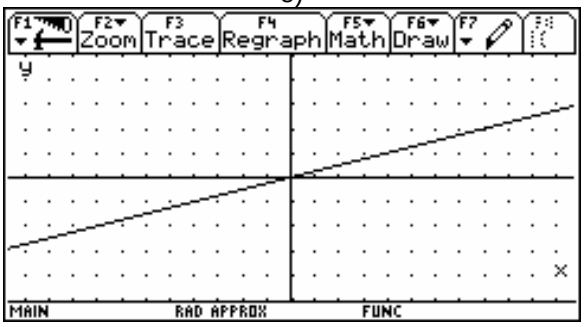
c)


F1 F2 Zoom F3 Trace F4 Regraph F5 Math F6 Draw F7
y
MAIN RAD APPROX FUNC

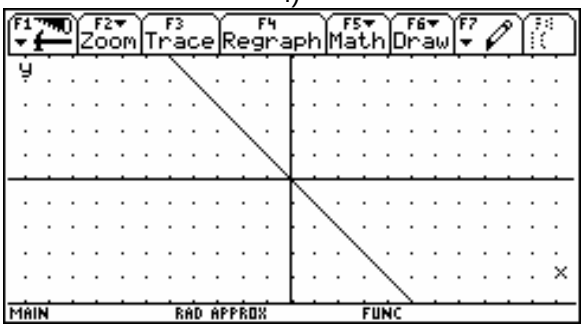
d)


F1 F2 Zoom F3 Trace F4 Regraph F5 Math F6 Draw F7
y
MAIN RAD APPROX FUNC

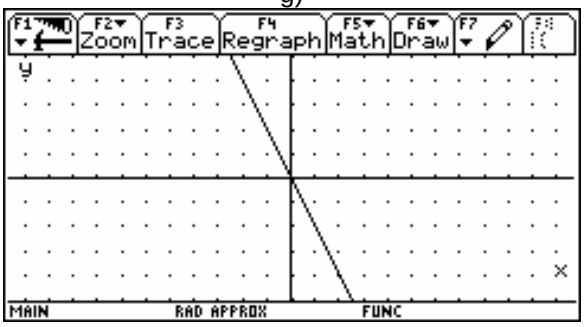
e)


F1 F2 Zoom F3 Trace F4 Regraph F5 Math F6 Draw F7
y
MAIN RAD APPROX FUNC

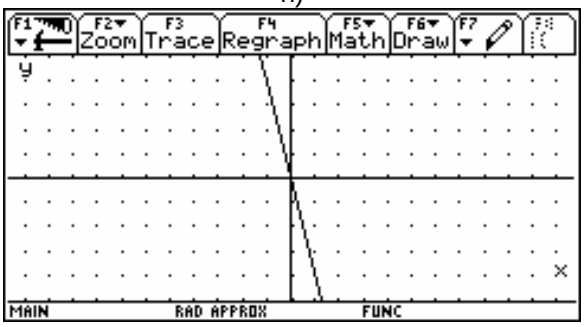
f)


F1 F2 Zoom F3 Trace F4 Regraph F5 Math F6 Draw F7
y
MAIN RAD APPROX FUNC

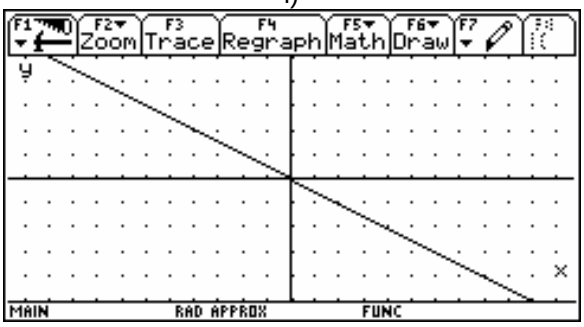
g)


F1 F2 Zoom F3 Trace F4 Regraph F5 Math F6 Draw F7
y
MAIN RAD APPROX FUNC

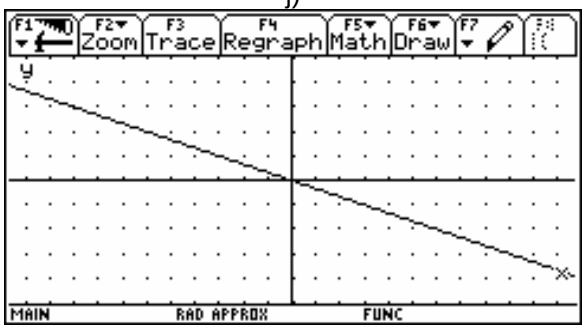
h)


F1 F2 Zoom F3 Trace F4 Regraph F5 Math F6 Draw F7
y
MAIN RAD APPROX FUNC

i)

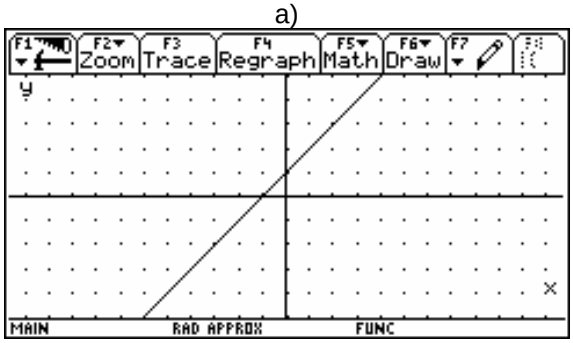


j)

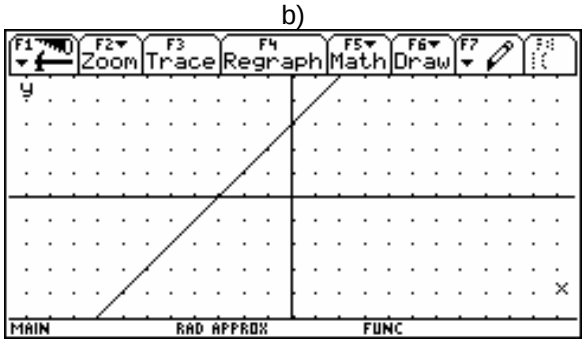


5.

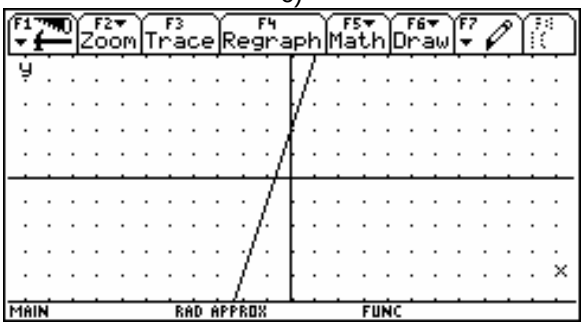
a)



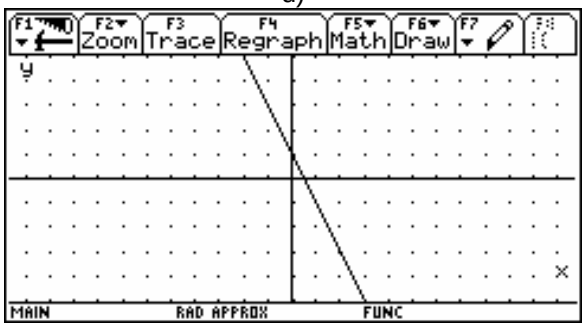
b)



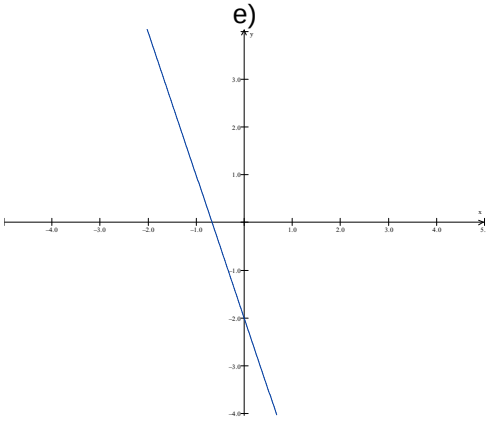
c)



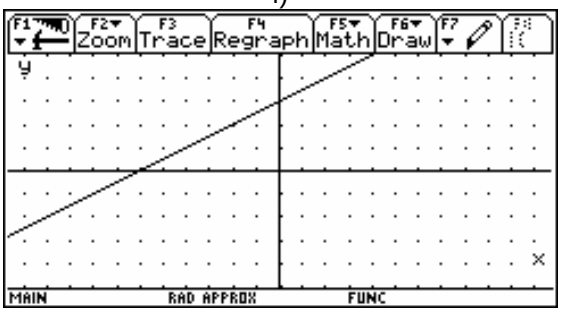
d)



e)

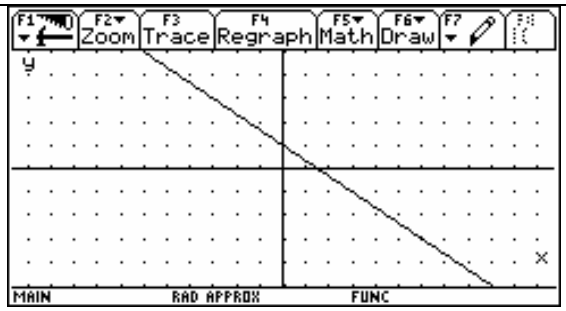


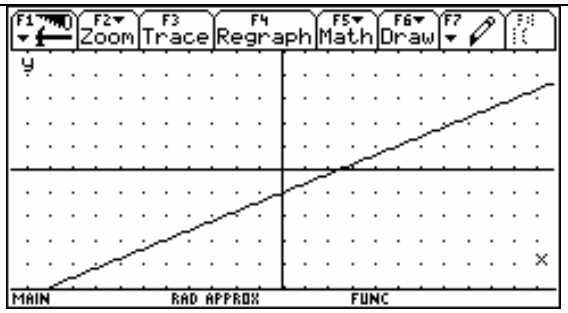
f)



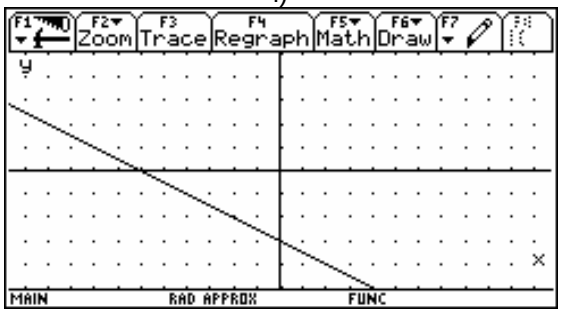
g)

h)





i)



6.

a) $y=-\frac{3}{2}$

b) $y=x+1$

c) $y=-2x+4$

d) $y=2x-3$

e) $y=\frac{1}{3}x-2$

f) $y=-\frac{1}{4}x+3$

Capítulo 13

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1.

a) $\left(x+\frac{5}{2}\right)^2-\frac{25}{4}$

b) $(x+4)^2-9$

c) $4\left[\left(x-\frac{1}{2}\right)^2-10\right]$

d) $5\left[\left(x+\frac{1}{10}\right)^2-\frac{1}{100}\right]$

2.

a) $(x+3)^2+(y-1)^2=16$

b) $(x-1)^2+y^2=0$

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c) $(x-1)^2+(y-3)^2=4$

d) $x^2+y^2=1$

e) $\left(x+\frac{1}{2}\right)^2+\left(y-\frac{3}{4}\right)^2=\frac{1}{4}$

f) $x^2+(y-1)^2=1$

3.

a) $x^2 + y^2 - 9 = 0$ b) $x^2 + y^2 - 25 = 0$ c) $x^2 - 4x + y^2 + 2y - 11 = 0$

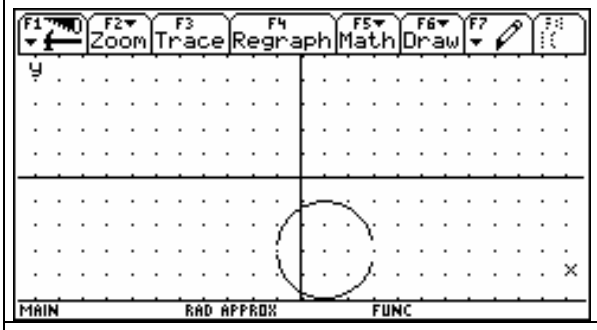
d) $x^2 + 8x + y^2 - 6y + \frac{1575}{64} = 0$ e) $x^2 + 2x + y^2 - 4y = 0$ f) $x^2 - 6x + y^2 + 4y - 12 = 0$

g) $x^2 - 6x + y^2 - 4y + 3 = 0$ h) $x^2 + y^2 - 2 = 0$ i) $x^2 - 6x + y^2 - 8y = 0$

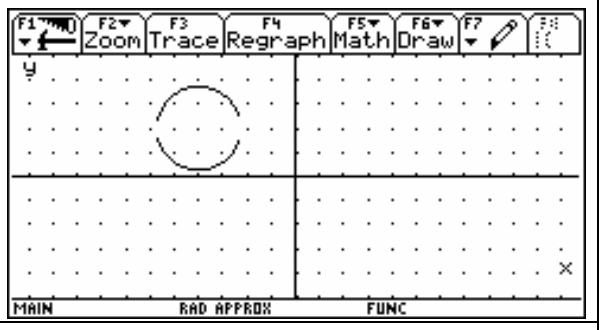
j) $x^2 - 2x + y^2 + 4y + 4 = 0$

4.

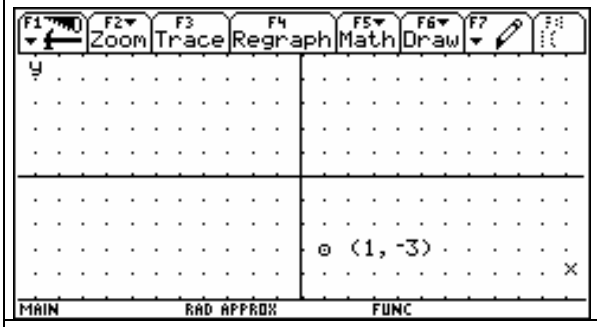
a) $(x-1)^2 + (y+3)^2 = 4$



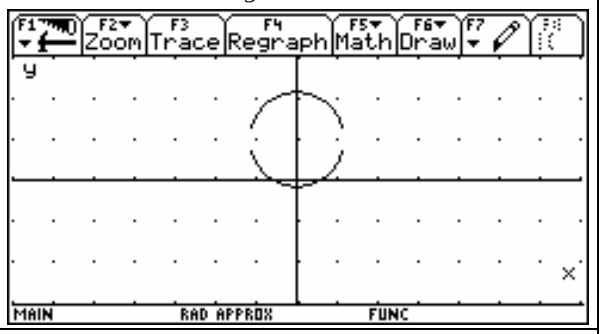
b) $(x+4)^2 + (y-2)^2 = 3$



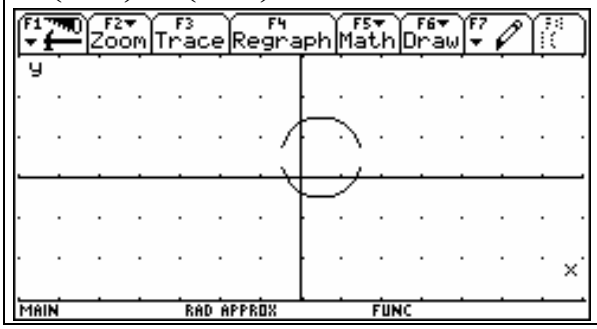
c) $(x-1)^2 + (y+3)^2 = 0$ el punto (1, -3)



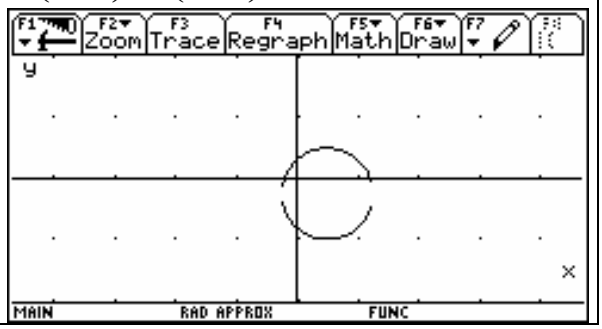
d) $(x-0)^2 + (y-1)^2 = \frac{4}{3}$

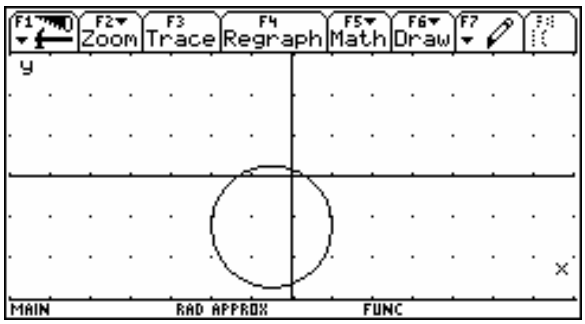
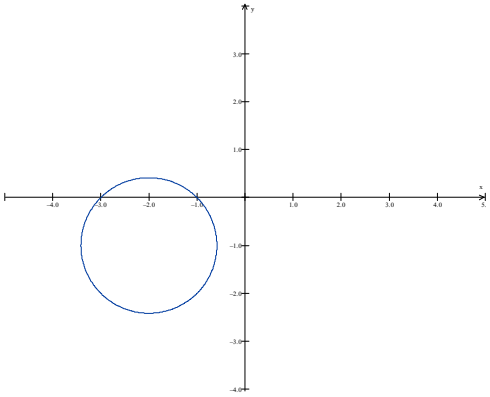


e) $\left(x - \frac{1}{2}\right)^2 + \left(y - \frac{1}{2}\right)^2 = 2$



f) $\left(x - \frac{1}{2}\right)^2 + \left(y + \frac{1}{4}\right)^2 = \frac{9}{16}$



g) $\left(x+\frac{1}{2}\right)^2+\left(y+\frac{5}{4}\right)^2=\frac{9}{4}$ 	h) $(x+2)^2+(y+1)^2=2$ 

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5.
a) Parábola b) Parábola c) Hipérbola

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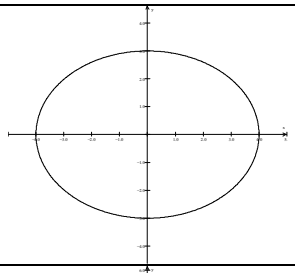
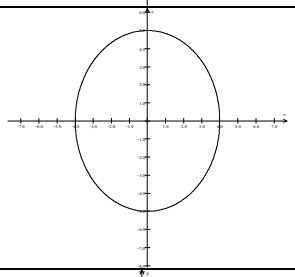
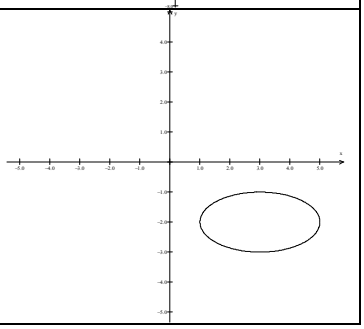
6.

a) Eje mayor = 8, eje menor = 6, coordenadas de los focos: F $(\sqrt{7},0)$ y F' $(-\sqrt{7},0)$	
b) $\frac{x^2}{16}+\frac{y^2}{25}=1$	
c) Centro $(3,-2)$, eje mayor = 4, eje menor = 2, coordenadas de los focos: F $(3-\sqrt{3},-2)$ y F' $(3+\sqrt{3},-2)$	

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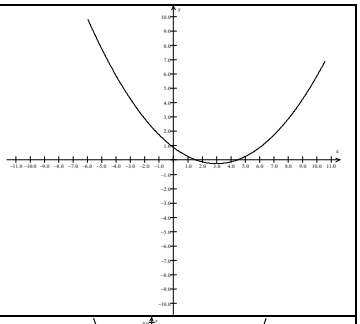
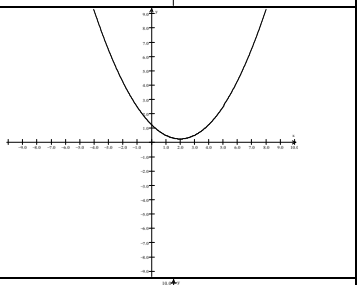
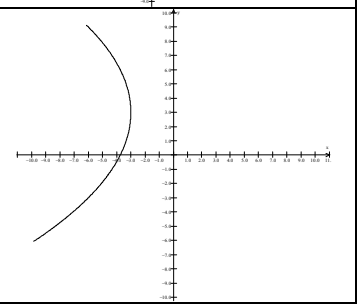
7.

a) $x^2 - 6x - 8y - 21 = 0$	
b)	
c) $(y - 3)^2 = -12(x+3)$	

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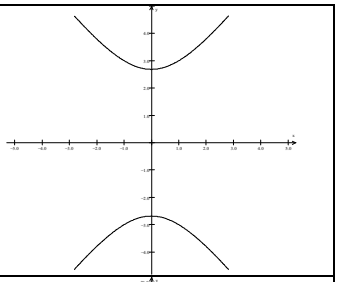
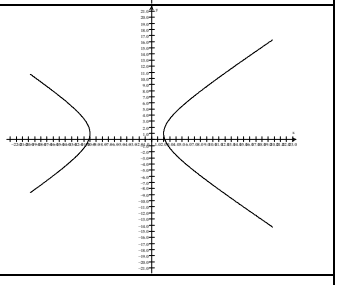
8.

a) $\frac{5y^2}{36} - \frac{x^2}{4} = 1$	
b) $16x^2 - 36y^2 + 128x + 72y - 356 = 0$	
c) $\frac{(x-2)^2}{9} - (y-2)^2 = 1$	

Capítulo 14

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1

$P = 18m$	$A = 20m^2$

2.

$P = 9m$	$A = \frac{9}{4}\sqrt{3}\, m^2$

3.

$A = 99m^2$	$V = 45m^3$

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4.

$A = 64\pi\, m^2$	$V = 64\pi\, m^3$

5.

$A = \sqrt{17}\,\pi\, m^2$	$V = \frac{4}{3}\pi\, m^3$