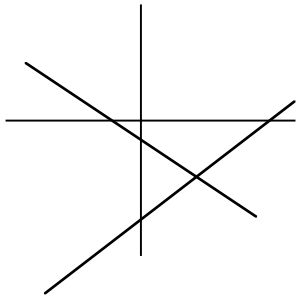
Answer Key (no work shown)

1.

a) (3, 2)

b) (4, 1)

c) (34/29, -76/29)



(above is a sketch)

d) 1. $m_1 = m_2$, $b_1 \neq b_2$

parallel

inconsistant

2. $m_1 = m_2$, $b_1 = b_2$

coinciding

dependent

3. $m_1 \neq m_2$, $b_1 \neq b_2$

intersecting

independent

e) (12, -30)

f) a) x + y = 12

3x - 6 = 5y

b) x + y = 1200

15x+10y=16500

c) 2x + 2y = 400

x = 3y + 10

2. a)

a)12

a) 16

b) 30

c) 7

d) 49

e) 483

b) a) no

b) yes

c) no

d) yes

e) no

f) yes

g) no

h) yes

c) a) one to many

b) one to many

many to one

d) a) -12/7

b) (-1/2, -2/2)

c) $\sqrt{193}$

d) -12/7

e) 7/12

e) m = 6/7,

b = -13/7

f) 1. 3y = 2x - 6

2. 5y = 4x + 35

3. 3y = -2x + 2

4. y = x + 7

5. y = 2x - 13

6. m = -5/3

M(-1, 6)

3y = -5x + 13

7. y = 5

g) a) $y = 2\left(x + \frac{5}{4}\right)^2 - \frac{49}{8}$

b) $y = \left(x + \frac{4}{2}\right)^2 - \frac{36}{4}$

h)

1. a) 2, 3, 1

b) open

c) min

d) y = 1

e) x = 3

f) (3, 1)

g) concave up

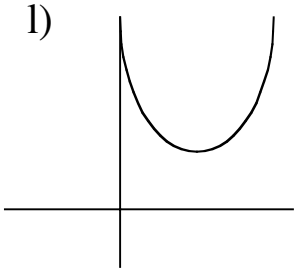
h) 19

i) empty set

j) all real nos

k) $y \geq 1$

l)



2. a) -3, -1, -2

b) down

c) max

d) y = -2

e) x = -1

f) (-1, -2)

g) concave down

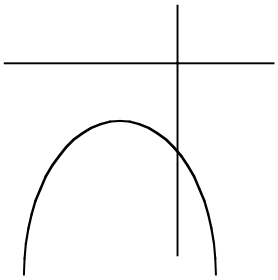
h) y = -5

i) empty set

j) all real nos.

k) $y \le -5$

l)



i) 1) 1/49

2) -7

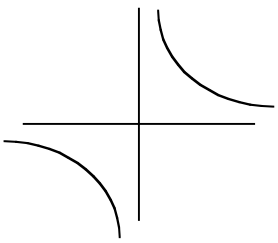
3) x = 5/14

59/28

j) 1. 2.5

2. d: $\{x < 0 \cup x > 0\}$

r: $\{y < 0 \cup y > 0\}$



3. 96

A.

1. (x -9)(x + 9)
2. $(x^2 + 25)(x - 5)(x + 5)$
3. [(x+2)-7][(x+2)+7]
4. (x - 3)(x - 4)
5. (x + 5)(x + 6)
6. (x - 9)(x + 6)
7. (x + 9)(x - 7)
8. (3x + 2)(x + 1)
9. (4x - 3)(x - 1)
10. (5x - 7)(x + 1)
11. (3x + 2)(4x - 1)
12. $(x + 1)(x^2 - x + 1)$
13. $(x^2 - 3)(x^4 + 3x^2 + 9)$
14. [(x - 4)- y]
    [(x - 4) + y]
15. [(x - 2) - 3y]
    [(x - 2) + 3y]

b) 1. -12

2. 198
3. yes
4. (x - 1)(x + 2)
   (x - 4)(x + 3)

c. 1. $\frac{2xy}{(4x - y)}$

2. $\frac{(x - 8)}{(x^2 - x + 1)}$
3. $\frac{(5 - 4x)(5 + 4x)}{(12x - 5)}$
4. xy^2
5. $\frac{(x + 4)}{(x - 1)}$
6. 1/2
7. 2x/-3
8. $\frac{1}{(a + 5)}$
9. $\frac{1}{(x + 5)}$
10. $\frac{2(3a^2 + 5a + 1)}{a(a + 1)(a + 2)}$
11. $\frac{x(3x - 4)}{(x - 2)(x + 2)(x + 4)}$

A.

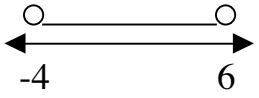
1. 2
2. 3/4
3. 1/2
4. 64/125
5. -3
6. 1/729
7. x^2
8. $x^{\frac{2}{3}}$
9. $3^{\frac{2}{5}} x^{\frac{4}{5}} y^{\frac{6}{5}}$
10. $x^{\frac{6}{12}} y^{\frac{3}{8}}$
11. $x^{\frac{7}{6}}$
12. $x^{\frac{13}{6}}$
13. $x^{\frac{6}{6}} y^{\frac{13}{6}}$
14. $x^{\frac{2}{3}}$
15. $\frac{1}{x^{\frac{2}{3}}}$
16. $\frac{x^{\frac{1}{3}}}{y^{\frac{5}{6}}}$

17. $x^{\frac{1}{6}}$
18. 1
19. 5^{2x+2y}
20. $3^{x^2-y^2}$

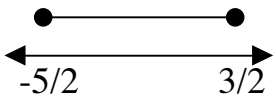
B.

1. -12
2. 5
3. $x^2y^3z^5$
4. $xy^2\sqrt[5]{x^2y^2}$
5. $\frac{3\sqrt[4]{x^2y^3}}{xy}$
6. $-5\sqrt{3}+3\sqrt{7}$
7. $11\sqrt{2}$
8. $-\sqrt[3]{x}+\sqrt{y}$
9. 8
10. 0
11. x
12. $6\sqrt[4]{10}$
13. 5
14. $\sqrt[3]{6}$
15. x^3
16. $2\sqrt{x}$
17. $\frac{\sqrt[3]{2^2}}{2}$
18. $\frac{\sqrt[5]{x^3y^4}}{xy}$
19. $\frac{\sqrt[6]{x^5}}{x}$
20. $x\sqrt[6]{x}$
21. -4
22. $11-2\sqrt{14}$
23. $2+\sqrt[3]{10}+2\sqrt[3]{2}+\sqrt[3]{20}$
24. $\frac{3\sqrt{5}-3}{4}$
25. $\frac{\sqrt{15}-2\sqrt{5}}{-1}$
26. $\frac{\sqrt{15}-3-\sqrt{10}+\sqrt{6}}{2}$

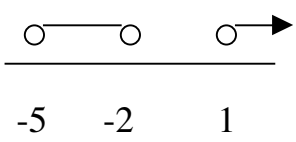
1. a) $\frac{5}{2}\pm\frac{\sqrt{17}}{2}$
   b) $\frac{7}{4}\pm\frac{\sqrt{33}}{4}$
2. a) {12/6, 2/6}
   b) $\frac{-6\pm2\sqrt{21}}{-8}$
3. a) {-7, 7}
   b) {-6, 6}
   c) {9, -1}
   d) {-3, 6/4}
4. a) 25/2
   b) 2
   c) 9
   d) {5, 1}
   e) {10, 2}
5. a) {1}
   b) {9}
   c) {-4}
6. a) {-9}
   b) {5/4, 1/4}
   c) {x<-4 and x>6}



   d) $\left\{\frac{-5}{2}\le x\le\frac{3}{2}\right\}$



   e)



Trig

1. (-4/2, 2/2)
2. $\sqrt{160}$
3. a) 475, 835
   -245, -605
   b) -563, -923
   157, 517
4. a) 60
   b) 50
   c) 27
5. a) sin 86
   -cos 4
   b) - tan 60
   -cot 4
   c) -cos 30
6. a) 66.09, 113.91
   b) 114.65, 245.5
   c) 11.48, 191.48
   d) 332.46, 207.53
7. a) $\frac{\sqrt{3}}{2}$
   b) $\frac{-\sqrt{3}}{2}$
   c) -1
   d) $\frac{\sqrt{2}}{2}$
8. a) $\frac{-1}{2}-\frac{\sqrt{2}}{2}$
   b) $-2-\sqrt{2}$
9. sin x = $\frac{3\sqrt{73}}{73}$

cos x = $\frac{-8\sqrt{73}}{73}$

tan x = -3/8

csc x = $\frac{\sqrt{73}}{3}$

sec x = $\frac{\sqrt{73}}{-8}$

cot x = -8/3

10. sin x = $\frac{-\sqrt{5}}{3}$

cot x = $\frac{-2\sqrt{5}}{5}$

11. a) x = 3, y = $3\sqrt{3}$

b) x = $5\sqrt{3}$, y = 10

c) x = 6, y = $6\sqrt{2}$

d) x = y = $4\sqrt{2}$

x = $\sqrt{130}$,

12. a) $\vartheta = 52$,

$\alpha = 38$

$\vartheta = 50$

b) $x = 21.45$

$y = 28$

$\vartheta = 40$

c) $y = 15.3$

$x = 12.8$

13. a) 187.93

b) 33.3