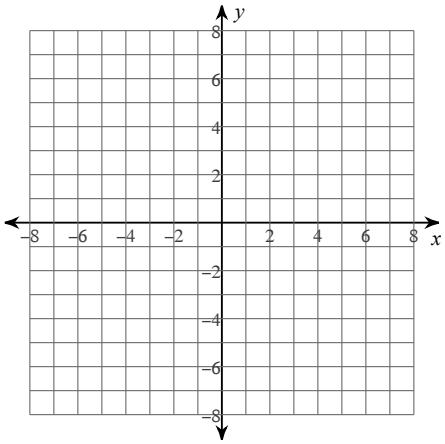
Semester Final Review Part 1

Date_____ Period____

Graph the function and identify the key features. Approximate where necessary. Write intervals in both notations.

1) $y = -2(x + 5)^2 + 3$



2) a. x-intercept(s):

b. y-intercept:

c. axis of symmetry:

d. vertex:

e. Max/Min Value:

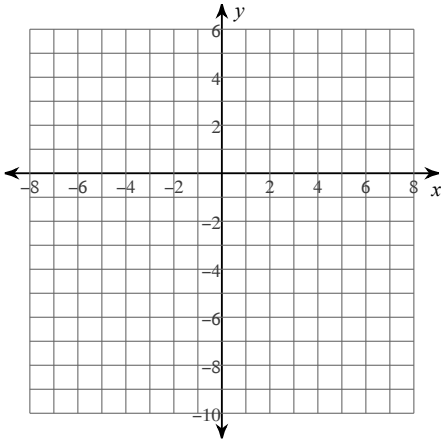
f. x-value that max/min the function:

g. Domain: h. Range:

j. Increasing: k. Decreasing:

l. Direction of Opening:

3) $y = -3(x - 2)(x - 4)$



4) a. x-intercept(s):

b. y-intercept:

c. axis of symmetry:

d. vertex:

e. Max/Min Value:

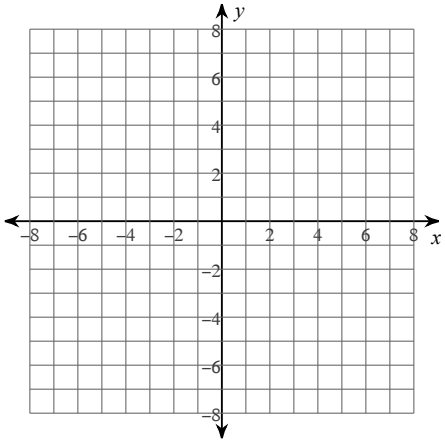
f. x-value that max/min the function:

g. Domain: h. Range:

j. Increasing: k. Decreasing:

l. Direction of Opening:

5) $y = x^2 - 4x + 5$



6) a. x-intercept(s):

b. y-intercept:

c. axis of symmetry:

d. vertex:

e. Max/Min Value:

f. x-value that max/min the function:

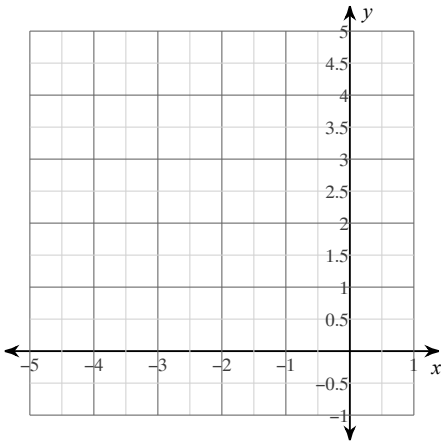
g. Domain: h. Range:

j. Increasing: k. Decreasing:

l. Direction of Opening:

Sketch the graph. Then write the equation in all three forms.

7) $y = -x^2 - 4x$

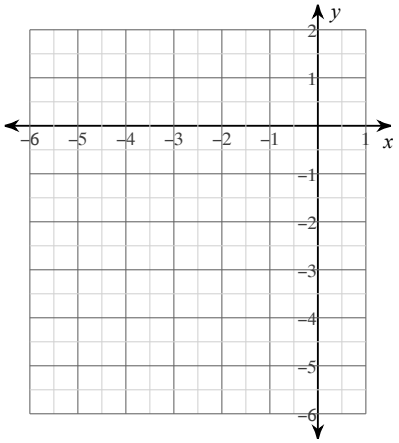


8) Vertex Form:

Intercept Form:

Standard Form:

9) $y = (x + 4)^2 - 4$

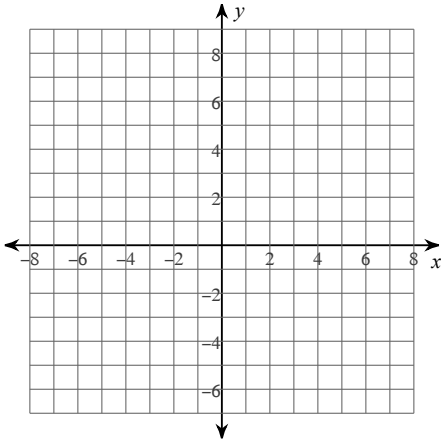


10) Vertex Form:

Intercept Form:

Standard Form:

11) $y = 3(x - 4)(x - 2)$



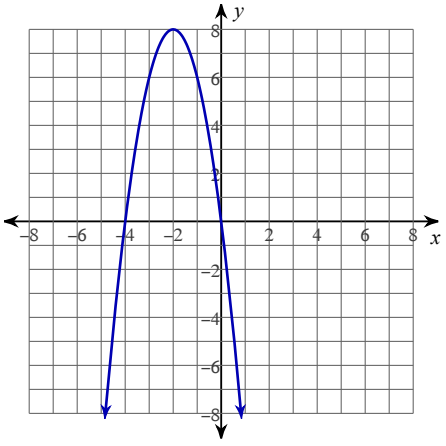
12) Vertex Form:

Intercept Form:

Standard Form:

Write the equation from the graph.

13)

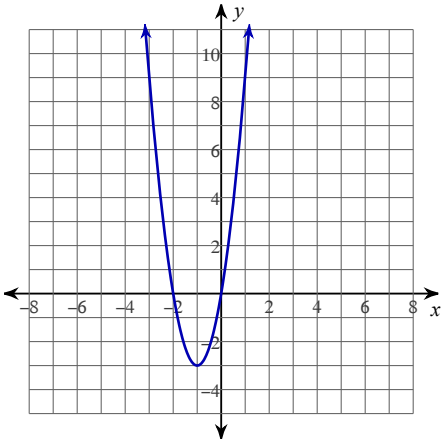


14) Vertex Form:

Intercept Form:

Standard Form:

15)

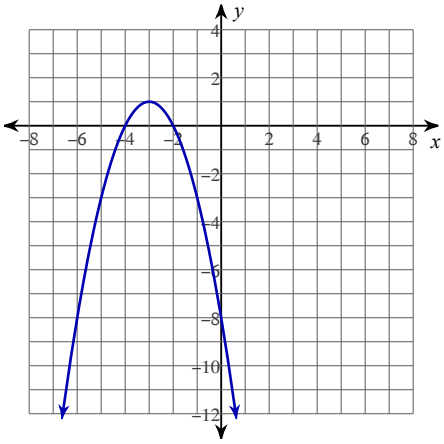


16) Vertex Form:

Intercept Form:

Standard Form:

17)



18) Vertex Form:

Intercept Form:

Standard Form:

Factor each completely.

19) $4x^2 + 16x + 12$

20) $n^2 - 10n + 24$

21) $5x^2 - 38x + 21$

22) $15p^2 + 115p + 150$

23) $25x^2 - 9$

24) $9a^2 - 16$

25) $x^2 - 9$

26) $50a^2 + 2$

27) $4k^2 + 9$

28) $16x^2 + 25$

29) $x^2 - 13$

30) $4x^2 - 12$

31) $16x^2 + 63$

32) $x^2 + 72$

Solve each equation by taking square roots.

33) $-8x^2 = 48$

34) $p^2 - 8 = 84$

Solve each equation by factoring.

35) $k^2 + 2k - 3 = 0$

36) $x^2 - 14x + 48 = 0$

37) $k^2 + 4k - 5 = 0$

38) $3a^2 - 11a - 4 = 0$

39) $6x^2 - 15x - 75 = 0$

40) $7x^2 - 3x - 4 = 0$

Solve each equation by completing the square.

41) $a^2 + 2a + 50 = -10$

42) $n^2 + 18n - 21 = -3$

43) $p^2 - 6p - 17 = 5$

Solve each equation with the quadratic formula.

44) $3r^2 = -10r - 9$

45) $5p^2 + 7p = -5$

46) $9k^2 - 9k = 3$