Math-2   Name_____ ID: 1

SM2 HW #5-8 (Unit 5 Test Preview HW)   Date_____ Period____

Factor each completely.

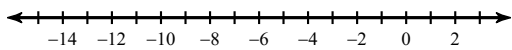1) $r^2 - 5r - 50$ 2) $x^2 + 7x$
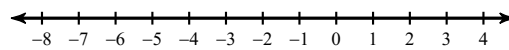
3) $6k^2 + 42k + 72$ 4) $5n^2 - 95n + 450$

Solve each inequality (write an equivablen "and" or "or" inequality and graph its solution.

5) $4 + 4|n + 6| \geq 20$
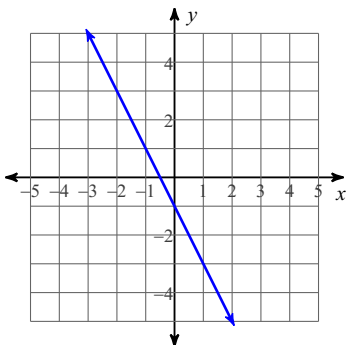

6) $7 - 6|8m| > -41$

For problems 7 and 8:

a) **Convert the equation to intercept form by factoring.**
b) **What are the x-intercepts?**
c) **Find the vertex using the method I taught in the notes.**
d) **Write the vertex form equation.**

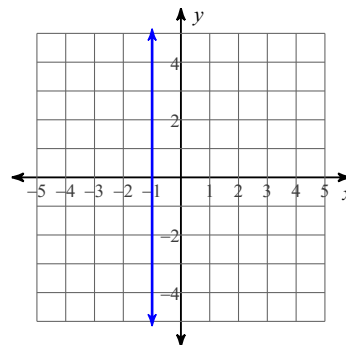7) $y = x^2 - 10x + 24$ 8) $y = x^2 - 18x - 40$

Write the slope-intercept form of the equation of each line.

9)

10)

Find each product.

11) $(4m - 5)^2$

12) $(5p - 3)^2$

For problems 13, 14, and 15:
a) What is the y-intercept?
b) Factor each completely.
c) What are the x-intercepts?

13) $y = 3x^2 + 13x - 10$

14) $y = 5x^2 - 2x$

15) $y = 2x^2 + 3x - 14$

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

a) Describe the transformation of the parent function.
b) What is the range of the function?
c) What is the vertex?

17) $y = 3 - 2\sqrt{x - 4}$

a) What is the "endpoint"?

b) What is the domain?

c) What is the range?

18) Write the equation of a line that passes through: $(3, -4)$ and $(-5, -2)$

For problems 19 and 20:
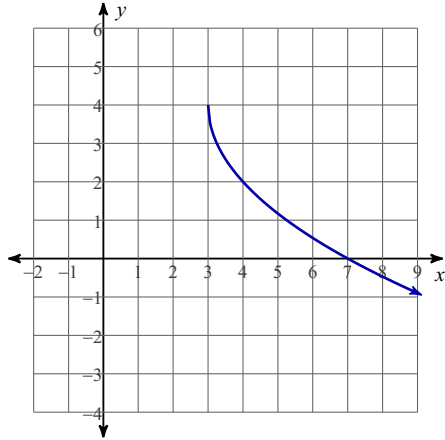**a) Convert to intercept form**
b) List the x-intercepts.

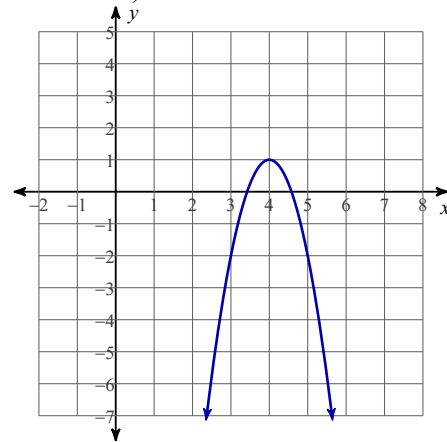19) $2x^2 + 5x = 0$

20) $5x^2 - 32x + 12 = 0$

21) a) What is the equation?

b) Where is the function positive?

22) a) What is the equation?

b) What is the end-behavior (use "infinity notation")

Find the "zeroes" of the equations.

23) $n^2 + 1 = -7$

24) $3x^2 = -168$

25) Find the zeroes.

$y = -2(x-5)^2 + 12$

26) Find the zeroes.

$y = -3(x-2)^2 - 15$

a) Convert the following equations to vertex form.
b) Solve the resulting equations by taking square roots.

27) $x^2 - 8x - 23 = 0$

28) $x^2 + 10x + 4 = 0$

29) Draw the "Quadratic Triangle" and label it to name:
a) The method used to convert standard form to intercept form
b) The method used to convert intercept form into vertex form
c) The method used to convert standard form to vertex form.

30) The width of a rectangle is 2 less than 3 times its length. If the area of the rectangle is 100 square feet:
a) Write the equation that relates ther information in the sentence above.
b) Solve by graphing to find the length and width of the rectangle.

31) The width of a rectangle is 6 more than 2 times its length. If the area of the rectangle is 500 square feet:
a) Write the equation that relates ther information in the sentence above.
b) Solve by graphing to find the length and width of the rectangle.

32) You have 460 feet of fence to build a rectangular corral adjacent to a lake. The side next to the lake is not fenced.

a) Draw an overhead view of the corral with the side lengths labeled (in terms of "x")
b) Write the equation used to calculate the area.
c) What is the maximum area enclosed by the fence?
d) What length and width of the corral?

33) You have 80 feet of fence. You want to use a large barn to enclose one side of the corral. a) Draw and overhead view of the corral.
b) Write the equation used to calculate the area.
c) What is the maximum area enclosed by the fence?
d) What are the side lengths of the corral?

34) A ball is thrown upward from the top of a 100 foot building (10 stories tall) initial velocity of 35 ft/sec. The equation modeling this situation is $h(t) = -16t^2 + 35t + 100$
a) What is the ball's maximum height above ground level?
b) How many seconds after it was thrown will it reach the maximum height?
c) How many seconds after it was thrown will it hit the ground?

35) A arrow is shot from a bow with an initial upward velocity of 300 feet/sec. The Initial height of the arrow is 7 feet. The equation that models this situation is: $h(t) = -16t^2 + 400t + 7$
a) What is the arrow's maximum height?
b) When will the arrow reach its maximu height?
c) When will the arrow fall back to the ground?