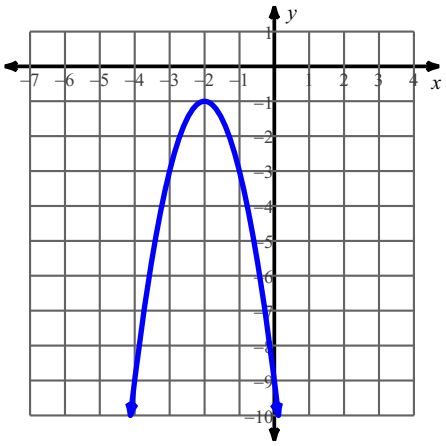
Secondary 2H Graphing Quadratics Unit Name_____

Review

Period____

Given each graph identify the a) vertex, b) axis of symmetry, c) x-intercept(s), d) y-intercept, e) maximum/minimum value and label as max/min, f) intervals the graph is increasing and decreasing, g) domain, and h) range. Give exact values if possible. NO CALCULATOR!!

1)



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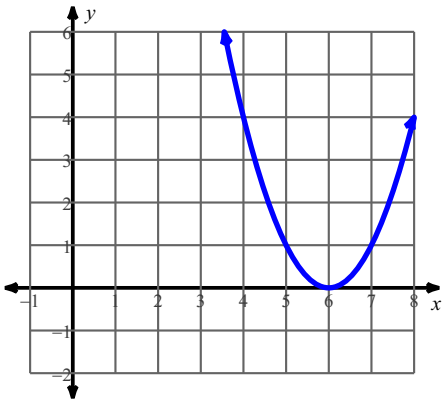

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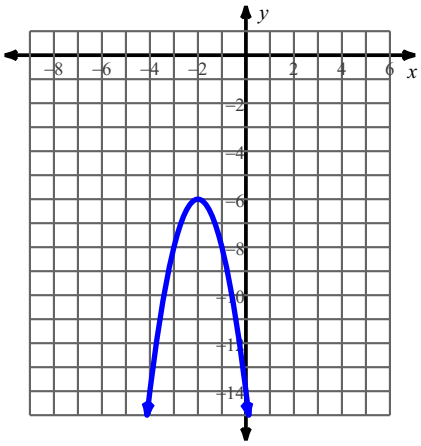

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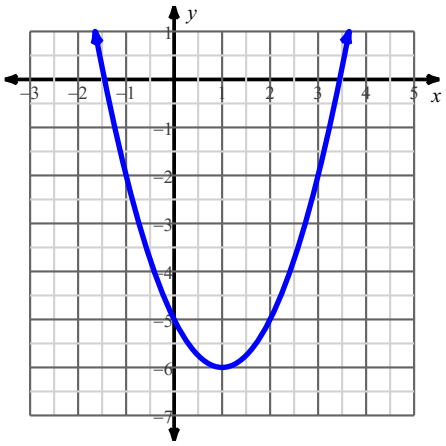


For each problem below, Identify which form the quadratic is in. Then find all Key Features that can be found from that particular form, with out doing any convertions. Some could be more than one form. NO CALCULATOR!!

5) $y = \frac{1}{4}x^2 - x - 8$

6) $y = -(x - 9)^2 - 8$

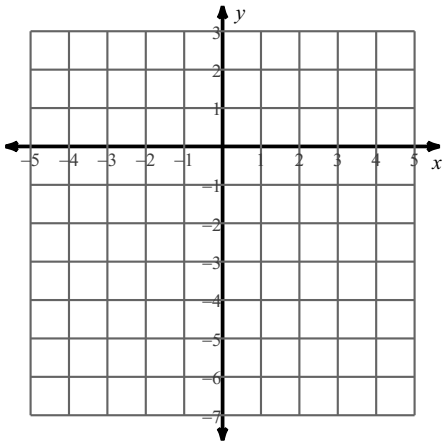
7) $y = -x^2 + 1$

8) $y = 7(x - 6)(x + 3)$

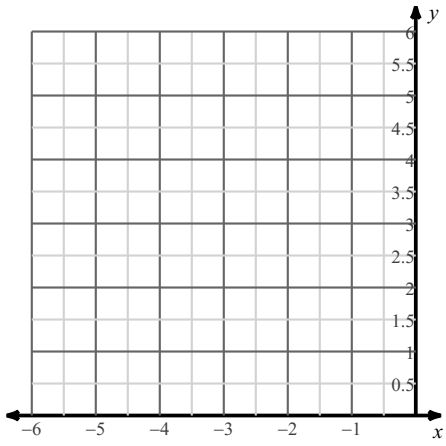
9) $y = -15(x - 4)^2$

Sketch the graph of each function. Remember you must have at least 5 exact points, and to find certain key features you may need to convert the quadratic equation to another form. Then list domain, range, intervals of increasing and decreasing. NO CALCULATOR!!!

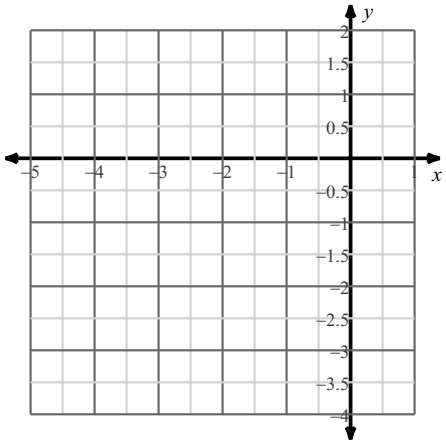
10) $y = -2x^2 - 4x$



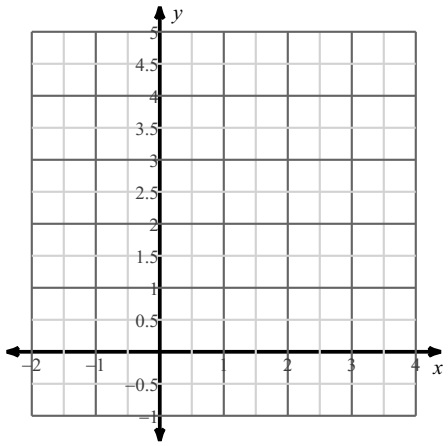
11) $y = x^2 + 6x + 10$



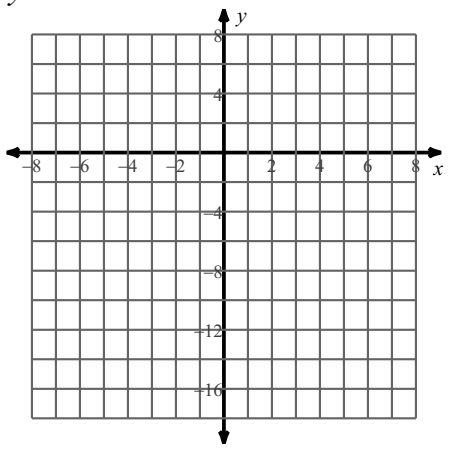
12) $y = (x+1)^2 - 3$



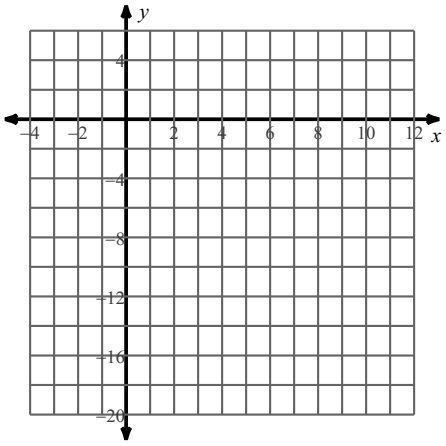
13) $y = \frac{1}{2}(x-2)^2 + 1$



14) $y = x^2 - 16$



15) $y = \frac{1}{2}(x+2)(x-10)$



A) Find the discriminant of each quadratic equation
B) State the number and type of unique solutions
C) State the number of unique x-intercepts
CALCULATOR ALLOWED!

16) $-5r^2 - 2r - 3 = 0$

17) $-2x^2 - 4x - 2 = 0$

18) $-a^2 - 5a - 4 = 0$

19) $x^2 + 12x = -61$

What are 3 other names for x-intercepts?

20)

Determine the equation of each quadratic described.

21) A quadratic function has zeros of $(-2, 0)$ and $(5, 0)$, and goes through the point $(-1, -3)$.

22) A quadratic function has a vertex at $(4, -6)$ and goes through the point $(3, -1)$.

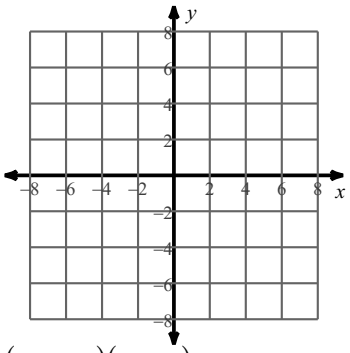
23) A quadratic function has roots of $(0, 0)$ and $(6, 0)$, and goes through the point $(4, 3)$.

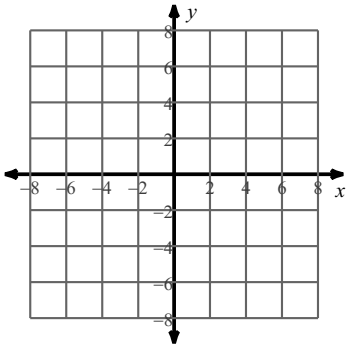
24) A quadratic function has a vertex at $(-1, 2)$ and has a y-intercept of 9.

Solve each quadratic inequality. Graph the solution(s) on a number line and give in set and interval notation. (The graph is given if you need it.)

25) $(x-4)^2 - 9 \leq 0$

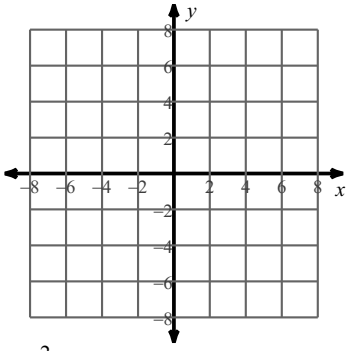
26) $(x-6)(x+5) > 0$

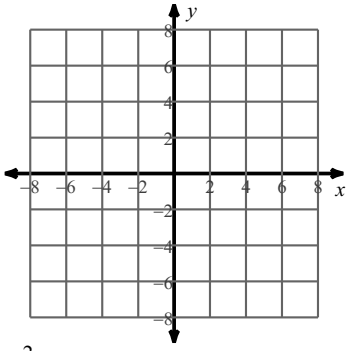




27) $(4x-1)(x+2) \geq 0$

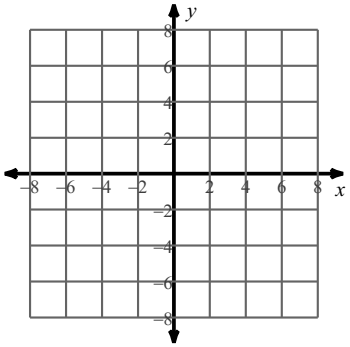
28) $x^2 + 5 \leq 0$

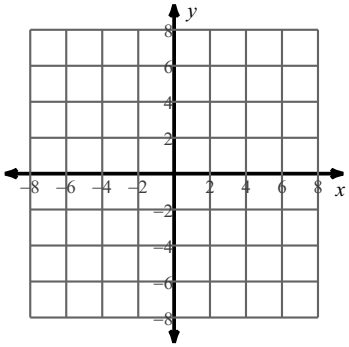




29) $-x^2 + 25 \leq 0$

30) $x^2 - 3x + 2 \geq 0$

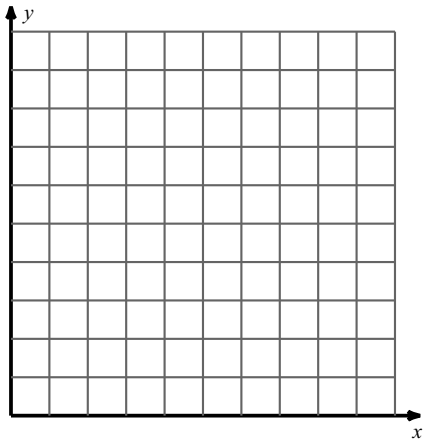




If a toy rocket is launched vertically upward from ground level with an initial velocity of 128 feet per second, then its height *h* after *t* seconds is given by the equation $h(t)=-16t^2+128t$ (if air resistance is neglected). CALCULATOR ALLOWED!!!

31) Graph the path of the rocket with AT LEAST 5 points.

How long will it take for the rocket to return to the ground?



32) How long will it take the rocket to hit its maximum height?

33) What is the maximum height?

34) What is a reasonable domain and a reasonable range for this scenario?

One of the games at a carnival involves trying to ring a bell with a ball by hitting a lever that propels the ball into the air. The height of the ball is modeled by the equation $h(t)=-16t^2+39t$. CALCULATOR ALLOWED!!!

35) If the bell is 25 ft. above the ground, will it be hit by the ball? And why or why not?

Abigail tosses a coin off a bridge into the stream below. The distance, in feet, the coin is above the water is modeled by the equation $d(t)=-16t^2+96x+112$. Where t represents time in seconds. CALCULATOR ALLOWED!!!

36) What is the greatest height of the coin?

37) How much time will it take for the coin to hit the water?

38) What is a reasonable range for this scenario?

39) What is the height of the bridge that Abigail tosses the coin from?