NAME Key **DATE** **PER.**

REVIEW #15: QUADRATIC FUNCTIONS

Use a calculator to find each of the following.

1. Find the zeros of $f(x) = -4x + 8$.

$x = 2 \Rightarrow$ Linear: 1 solution

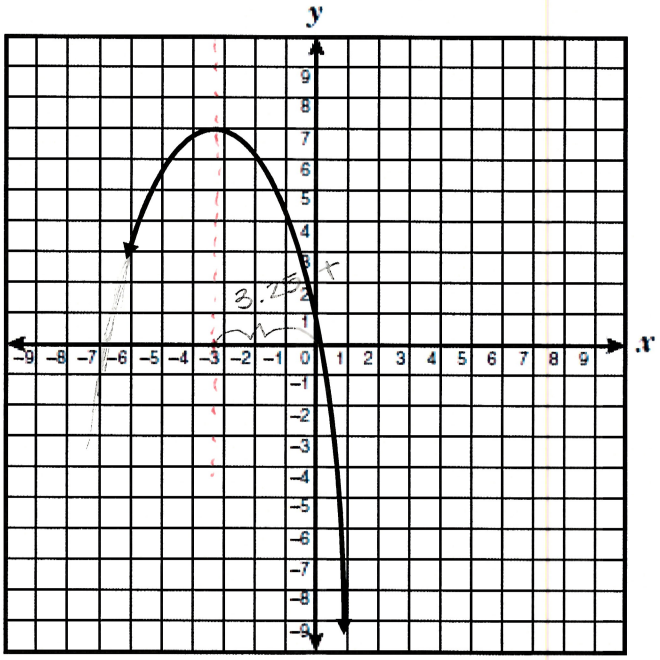
2. What are the solutions of $x^2 - 3x - 15 = 0$?

$x = -2.7$ and $x = 5.7$

3. Find the vertex of $f(x) = 2x^2 + 3x - 8$.

min $\Rightarrow (-.75, -9.125)$

4. Part of the graph of a quadratic function is shown.



If the line of symmetry for this quadratic equation is $x = -3.25$ between which two integers will the other part of the graph intersect the x-axis.

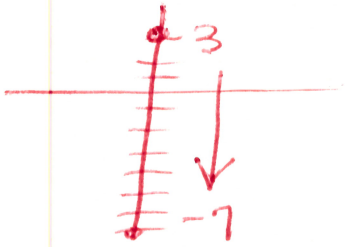
A -9 and -8
B -8 and -7
C -7 and -6
D -6 and -5

5. If the graph of the function $y = 2.7x^2 + 4$ is shifted 5 units down, write the equation that could represent the shifted graph?

$y = 2.7x^2 - 1$

6. How would the graph of the function $y = x^2 + 3$ be affected if the function were changed to $y = x^2 - 7$?

A The graph would shift 10 units up.
B The graph would shift 10 units down.
C The graph would shift 10 units right.
D The graph would shift 10 units left



7. In the graph of the function $f(x) = x^2 - 7$, which describes the shift in the vertex of the parabola if, in the function, -7 is changed to -4?

A 3 units up **C** 3 units down

B 7 units up **D** 7 units down

8. How do the graphs of the functions $f(x) = x^2 + 8$ and $g(x) = x^2 - 4$ relate to each other?

A The graph of $f(x)$ is 12 units above the graph of $g(x)$.
B The graph of $f(x)$ is 4 units above the graph of $g(x)$.
C The graph of $f(x)$ is 12 units to the right the graph of $g(x)$.
D The graph of $f(x)$ is 4 units to the right the graph of $g(x)$.

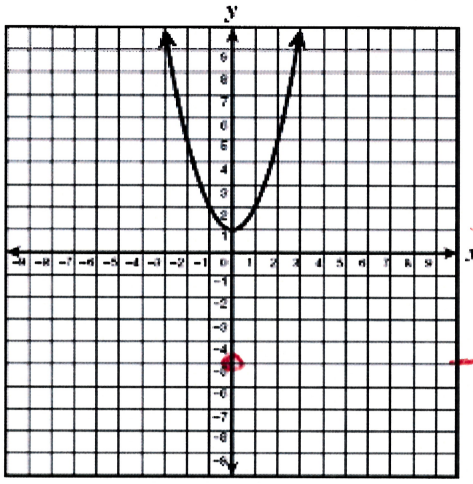
9. How does the graph of $y = x^2 + 6$ compare to the parent function?

A The graph of $y = x^2 + 6$ is wider than the graph of the parent function.
B The graph of $y = x^2 + 6$ is shifted up from the graph of the parent function.
C The graph of $y = x^2 + 6$ is shifted down from the graph of the parent function.
D The graph of $y = x^2 + 6$ is right than the graph of the parent function.

10. Which quadratic function has a vertex above the origin and opens downward?

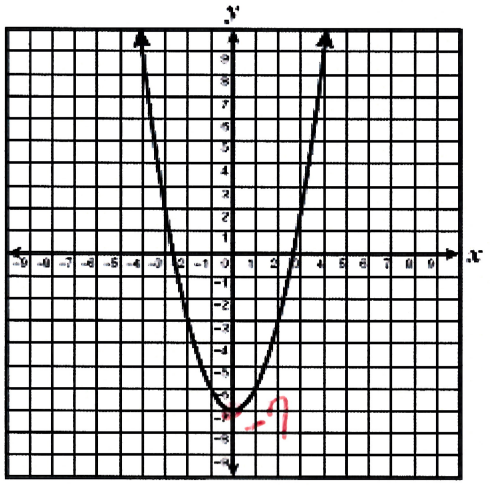
A $y = -x^2 + 3$
B $y = -x^2 - 1$
C $y = x^2 + 5$
D $y = x^2 - 2$

11. The graph of a function is shown below.

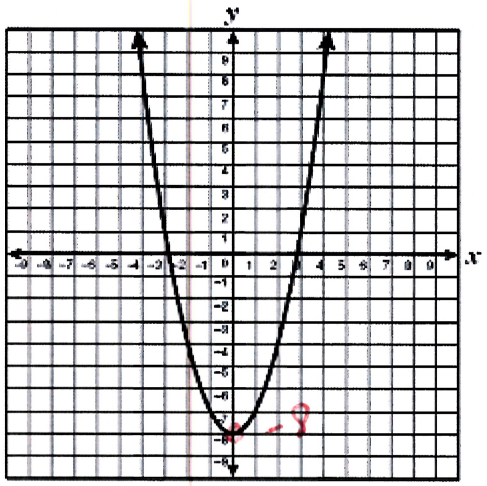


If the graph is translated 6 units down, which of the following best represents the resulting graph?

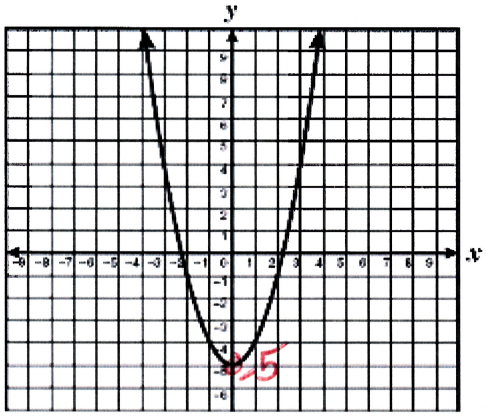
A



C



B



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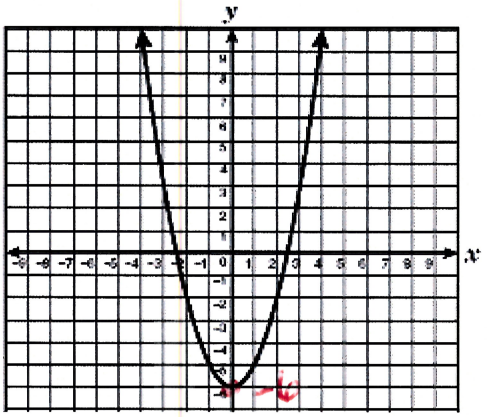
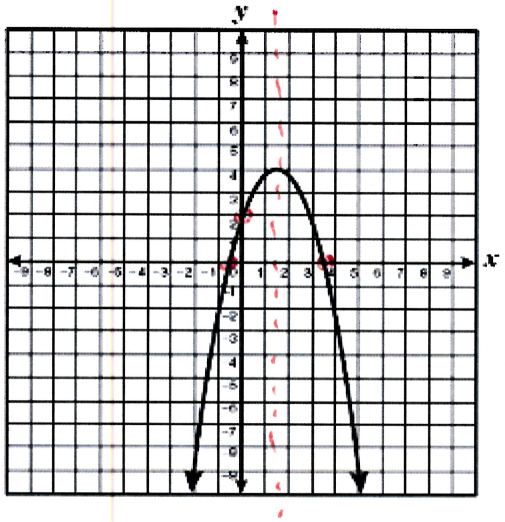


?
graph cut off?

12. What are the y-intercepts and x-intercepts of the graph below. Write these points as ordered pairs.



x-intercepts: (-.5, 0)(3.5, 0)

y-intercept: ~~(2, 0)~~ (0, 2)

13. Using the graph in #12 find the equation for the axis of symmetry.

$x = 1.5$

14. Which of the following lists the functions of the form $y = ax^2$ in order from the widest to the narrowest graph?

widest → narrowest

small → large

$\frac{7}{2} = 3.5$

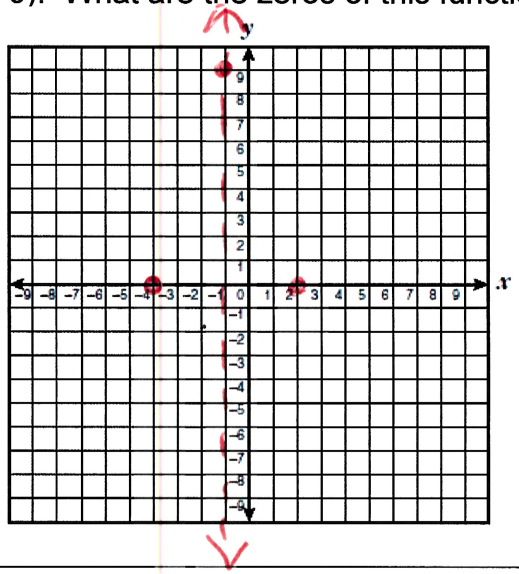
A $y = \frac{7}{2}x^2, y = 3x^2, y = \frac{1}{2}x^2, y = 2x^2$

B $y = \frac{1}{2}x^2, y = 3x^2, y = 2x^2, y = \frac{7}{2}x^2$

C $y = \frac{1}{2}x^2, y = 2x^2, y = 3x^2, y = \frac{7}{2}x^2$

D $y = 2x^2, y = \frac{1}{2}x^2, y = 3x^2, y = \frac{7}{2}x^2$

15. The vertex of the graph of a quadratic function is (-1, 9). What are the zeros of this function if the point (2, 0) lies on the graph?



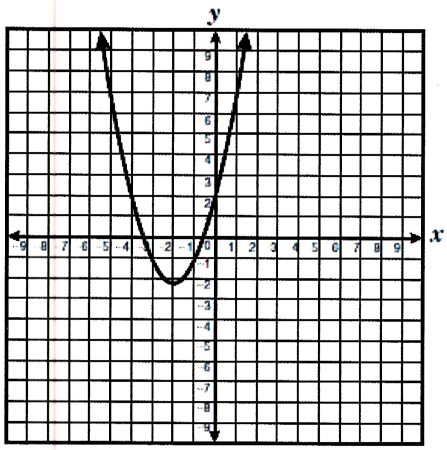
A x = -2 and x = 4

B x = -4 and x = 2

C x = 2 and x = 0

D Cannot be determined

16. The grid shows the intercepts of the graph of a quadratic function. Which of the following best represents the zeros of this function?



A {0, 2}

B {-2, -2.25}

C {-3.5, -0.5}

D {-4, 2}

17. Write the ordered pairs that represents the roots of the function $f(x) = 3x^2 + 3x - 6$.

$3(x^2+x-2)$ $x+2=0$ $x=-2$ $x-1=0$ $x=1$ $3(x+2)(x-1)$

18. Find the zeros of $y = -3x^2 - x + 4$.

$x = -1.3, 1$

19. Find the maximum of $y = -4x^2 + 12x - 5$.

$y = 4$ $(1.5, 4)$

Factor completely.

20. $x^2 - 4x - 32 =$ ~~$(x-8)(x+4)$~~ $(x-8)(x+4)$

21. $3x^3 + 24x^2 + 21x =$ $3x(x^2+8x+7)$ $3x(x+7)(x+1)$

Solve by factoring.

22. $8x^2 - 32 = 0$

$8(x^2-4)=0$

$8(x+2)(x-2)=0$

$x+2=0$ $x-2=0$

i

$x=-2$ $x=2$

23. $y^2 = -y + 42$

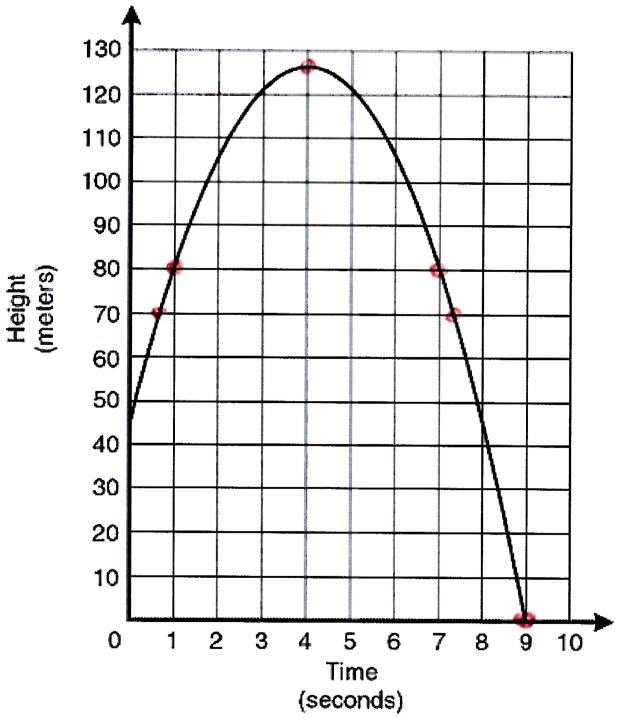
$y^2+y-42=0$

$(x+7)(x-6)=0$

$x+7=0$ $x-6=0$

$x=-7$ $x=6$

The graph below show the height of a baseball from the time it is thrown from the top of a building until the time it hits the ground.



24. What conclusion can be made about the path of the baseball?

A The baseball reached its maximum height at 9 seconds.
B At 0 seconds, the baseball was 125 meters off the ground.
C The baseball was in flight for 4 seconds.
D The maximum height of the baseball was 125 meters. ✓

25. At what time is the baseball at a height of 80 meters?

A 1 second
B 1 second and 7 seconds
C 1 second and 4 seconds
D 9 seconds

26. When did the baseball hit the ground?

1.5 - 0

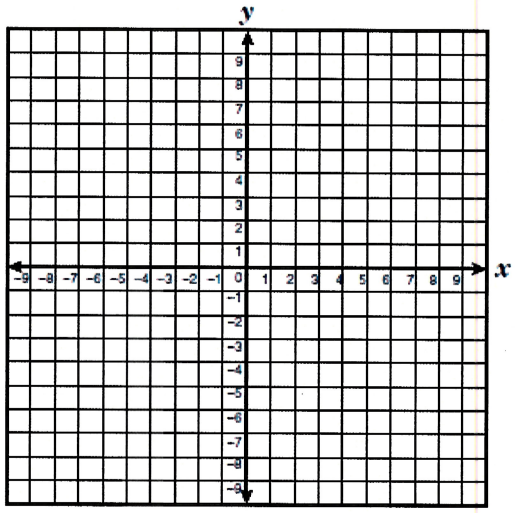
A 125 seconds
B 9 seconds
C 4 seconds
D 45 seconds

27. Approximately how much time will elapse while the baseball is 70 meters or more above the ground?

1.5 - 0.5 = 1

A 0.5 seconds
B 4 seconds
C 6.5 seconds
D 7 seconds

32. How does the graph of y = 2x – 5 compare to the graph of y = 3x – 5?



A. The slope of y = 2x – 5 is less steep.

B. The slope of y = 2x – 5 is steeper.

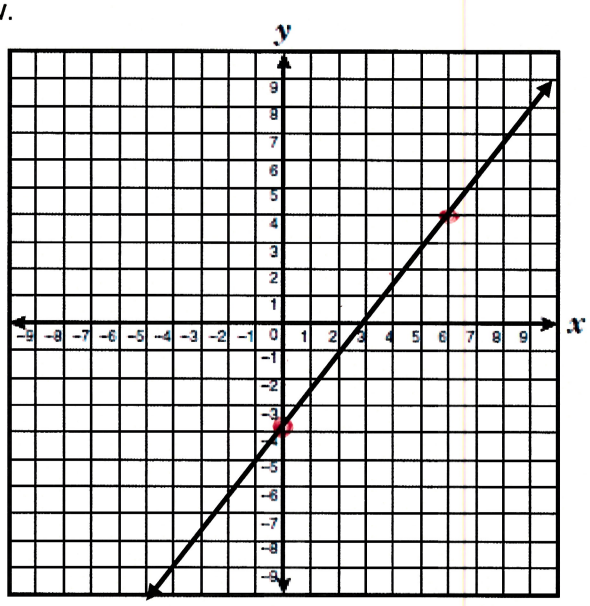
C. The graph of y = 2x – 5 has a greater y-intercept.

D. The graph of y = 2x – 5 has a smaller y-intercept.

33. The graph of a line is shown below.

$y = \frac{4}{3}x - 4$

original



If the slope of this line is multiplied by -2 and the y-intercept increases by 1, what is the equation of the new line?

New: $y = -\frac{8}{3}x - 3$

Add a C

Answers in random order: (1.5, 4) -2 2 (-.5, 0) (3.5, 0) 5.7

A A A A A B B B B B B B C C D D (1, 0) -1.3

(-.75, -9.125) $y = 2.7x^2 - 1$ (0, 2) $x = 2$ -2.7 $x = 1.5$ (-2, 0) 1

$(x - 8)(x + 4)$ -7 $y = +\frac{5}{3}x + 2$ $y = 2x + 14$ 6 $3x(x + 7)(x + 1)$

$y = -3x - 3$ $y > \frac{1}{3}x - 5$ $x = -2$

$y = -8/3x - 3$

Answers in random order: (1.5, 4) -2 2 (-.5, 0) (3.5, 0) 5.7

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