

Name: _____

Date: _____

Regents Review Day 3: Quadratics & Absolute Value

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| <p>1. The zeros of the function $f(x) = 3x^2 - 3x - 6$ are</p> <p>1) -1 and -2 2) 1 and -2 3) 1 and 2 4) -1 and 2</p> | <p>2. What are the solutions to the equation $x^2 - 8x = 24$?</p> <p>1) $x = 4 \pm 2\sqrt{10}$ 2) $x = -4 \pm 2\sqrt{10}$ 3) $x = 4 \pm 2\sqrt{2}$ 4) $x = -4 \pm 2\sqrt{2}$</p> <p style="text-align: center;">- 2.2</p> |
| <p>3. What is the solution of the equation $2(x+2)^2 - 4 = 28$?</p> <p>1) 6, only 2) 2, only 3) 2 and -6 4) 6 and -2</p> | <p>4. Sam and Jeremy have ages that are consecutive odd integers. The product of their ages is 783. Which equation could be used to find Jeremy's age, j, if he is the younger man?</p> <p>1) $j^2 + 2 = 783$ 2) $j^2 - 2 = 783$ 3) $j^2 + 2j = 783$ 4) $j^2 - 2j = 783$</p> |

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$y = x^2 - 8x - 24$

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$$2(x+2)^2 - 4 = 28$$

$$+4 \quad +4$$

$$2(x+2)^2 = 32$$

$$\frac{2(x+2)^2}{2} = \frac{32}{2}$$

$$\sqrt{(x+2)^2} = \sqrt{16}$$

$$j(j+2) = 783$$

$$j^2 + 2j = 783$$

$$x+2 = \pm 4 \quad x = -2 \pm 4$$

$$\pm 4 - 2$$

5. A landscaper is creating a rectangular flower bed such that the width is half of the length. The area of the flower bed is 34 square feet. Write and solve an equation to determine the width of the flower bed, to the nearest tenth of a foot.

*** Complete the Square**

6. Which equation and ordered pair represent the correct vertex form and vertex for $j(x) = x^2 - 12x + 7$?

- 1) $j(x) = (x - 6)^2 + 43, (6, 43)$
- 2) $j(x) = (x - 6)^2 + 43, (-6, 43)$
- 3) $j(x) = (x - 6)^2 - 29, (6, -29)$ ←
- 4) $j(x) = (x - 6)^2 - 29, (-6, -29)$

$$x^2 - 12x + 7$$

$$\frac{-12}{2} = -6$$

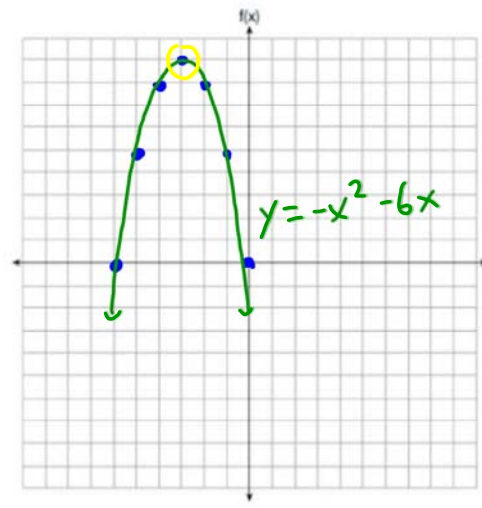
$$(-6)^2 = 36$$

$$x^2 - 12x + 36 - 36 + 7$$

$$(x - 6)^2 - 29$$

Vertex form ↑

7. Graph the function $f(x) = -x^2 - 6x$ on the set of axes below.



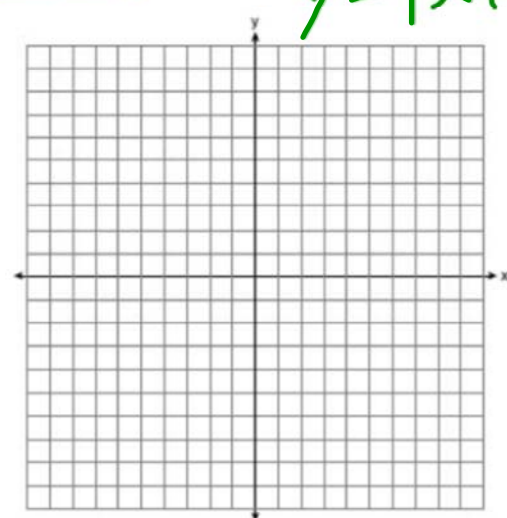
| x | y |
|----|---|
| -6 | 0 |
| -5 | 5 |
| -4 | 8 |
| -3 | 9 |
| -2 | 8 |
| -1 | 5 |
| 0 | 0 |

State the coordinates of the vertex of the graph.
 (-3, 9)

8. Morgan throws a ball up into the air. The height of the ball above the ground, in feet, is modeled by the function $h(t) = -16t^2 + 24t$, where t represents the time, in seconds, since the ball was thrown. What is the appropriate domain for this situation?

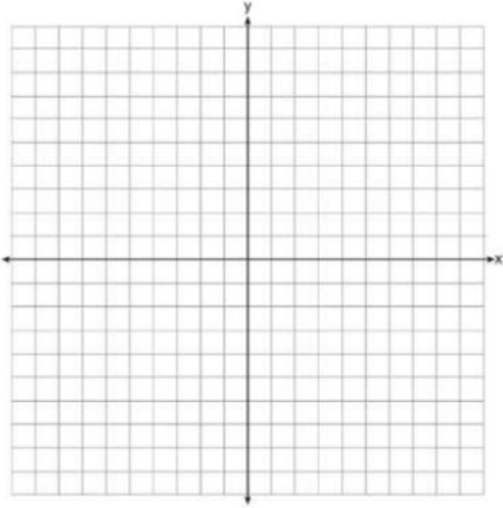
- 1) $0 \leq t \leq 1.5$
- 2) $0 \leq t \leq 9$
- 3) $0 \leq h(t) \leq 1.5$
- 4) $0 \leq h(t) \leq 9$

9. On the set of axes below, graph the function $y = |x + 1|$.



State the range of the function. State the domain over which the function is increasing.

Homework/Practice Questions

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| <p>1. If $4x^2 - 100 = 0$, the roots of the equation are</p> <ol style="list-style-type: none"> 1) -25 and 25 2) -25, only 3) -5 and 5 4) -5, only | <p>2. The zeros of the function $f(x) = 2x^2 - 4x - 6$ are</p> <ol style="list-style-type: none"> 1) 3 and -1 2) 3 and 1 3) -3 and 1 4) -3 and -1 |
| <p>3. The function $f(x) = 3x^2 + 12x + 11$ can be written in vertex form as</p> <ol style="list-style-type: none"> 1) $f(x) = (3x + 6)^2 - 25$ 2) $f(x) = 3(x + 6)^2 - 25$ 3) $f(x) = 3(x + 2)^2 - 1$ 4) $f(x) = 3(x + 2)^2 + 7$ | <p>4. Graph the function $y = x - 3$ on the set of axes below.</p> <div style="text-align: center; margin: 10px 0;">  </div> <p>Explain how the graph of $y = x - 3$ has changed from the related graph $y = x$.</p> |

5.

The height of a rocket, at selected times, is shown in the table below.

| | | | | | | | | |
|--------------------|-----|-----|-----|-----|-----|-----|-----|----|
| Time (sec) | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Height (ft) | 180 | 260 | 308 | 324 | 308 | 260 | 180 | 68 |

Based on these data, which statement is *not* a valid conclusion?

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| <ol style="list-style-type: none"> 1) The rocket was launched from a height of 180 feet. 2) The maximum height of the rocket occurred 3 seconds after launch. | <ol style="list-style-type: none"> 3) The rocket was in the air approximately 6 seconds before hitting the ground. 4) The rocket was above 300 feet for approximately 2 seconds. |
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