

Unit 2 Test

Multiple Choice

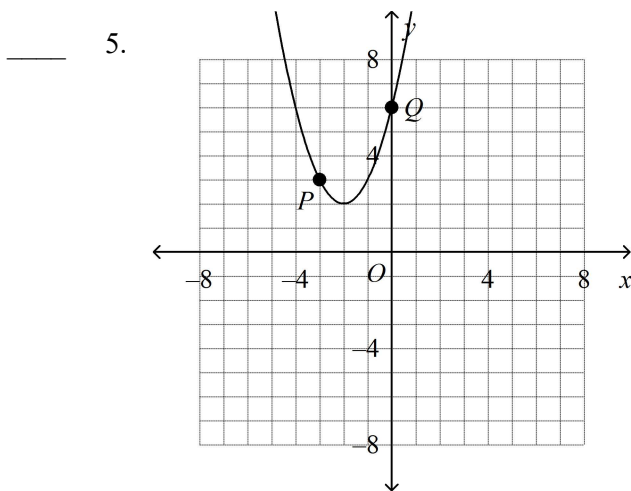
Identify the choice that best completes the statement or answers the question.

- _____ 1. Write an equation for the parabola whose vertex is at $(3, 6)$ and which passes through $(4, 4)$.
- a. $y = -2(x+3)^2 - 6$ c. $y = 2(x-3)^2 + 6$
 b. $y = (x+3)^2 - 6$ d. $y = -2(x-3)^2 + 6$

Factor the expression.

- _____ 2. $x^2 + 11x + 28$
- a. $(x+7)(x+4)$ c. $(x+4)(x-7)$
 b. $(x+7)(x-4)$ d. $(x-4)(x-7)$
- _____ 3. $6x^2 - 4x + 8$
- a. $6x(3x-2)$ c. $6x^2 - 4x + 8$
 b. $3(2x^2 - 4x + 8)$ d. $2(3x^2 - 2x + 4)$
- _____ 4. $-12x^2 - 8x$
- a. $x(-12x-8)$ c. $-12x(x+2)$
 b. $-4x(3x+2)$ d. $3x(x-4+2)$

Identify the vertex and the axis of symmetry of the parabola. Identify points corresponding to P and Q .



- a. $(-2, 2), x = -2$ c. $(2, -2), x = 2$
 $P'(-3, 3), Q'(3, 3)$ $P'(-1, 3), Q'(-4, 6)$
 b. $(2, -2), x = 2$ d. $(-2, 2), x = -2$
 $P'(-3, 3), Q'(3, 3)$ $P'(-1, 3), Q'(-4, 6)$

Solve the quadratic equation by completing the square.

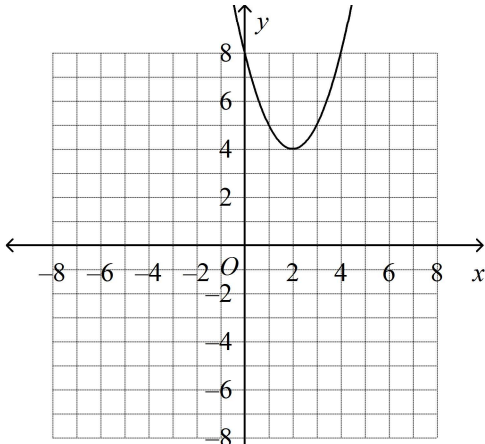
- _____ 6. $x^2 + 10x + 22 = 0$
- a. $5 \pm 2\sqrt{7}$ c. $100 \pm \sqrt{3}$
b. $-5 \pm \sqrt{3}$ d. $-10 \pm 2\sqrt{7}$
- _____ 7. The function $y = -16t^2 + 248$ models the height y in feet of a stone t seconds after it is dropped from the edge of a vertical cliff. How long will it take the stone to hit the ground? Round to the nearest hundredth of a second.
- a. 7.87 seconds c. 3.94 seconds
b. 0.25 seconds d. 5.57 seconds
- _____ 8. $-1 - \sqrt{-160}$
- a. $1 + i\sqrt{160}$ c. $-1 - 4i\sqrt{10}$
b. $-1 + 4i\sqrt{10}$ d. $1 - 4i\sqrt{10}$
- _____ 9. Use a graphing calculator to solve the equation $-10x^2 - 2x + 3 = 0$. If necessary, round to the nearest hundredth.
- a. -0.46, 0.66 c. -0.66, 0.46
b. -1.31, 0.91 d. -0.56, 0.56

Solve the equation.

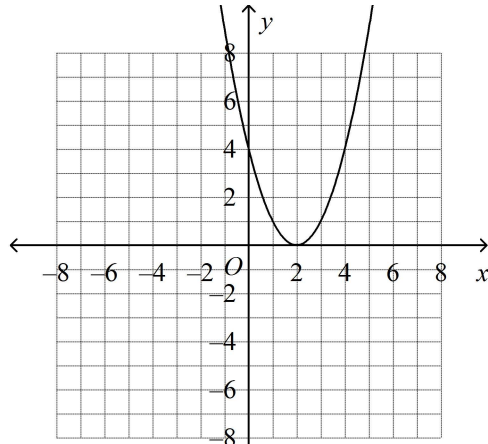
- _____ 10. $36x^2 + 4 = 0$
- a. $-\frac{1}{3}i, \frac{1}{3}i$ c. $-\frac{1}{9}i, \frac{1}{9}i$
b. $-\frac{1}{3}, \frac{1}{3}$ d. $-3i, 3i$

11. Which is the graph of $y = (x - 2)^2 + 4$?

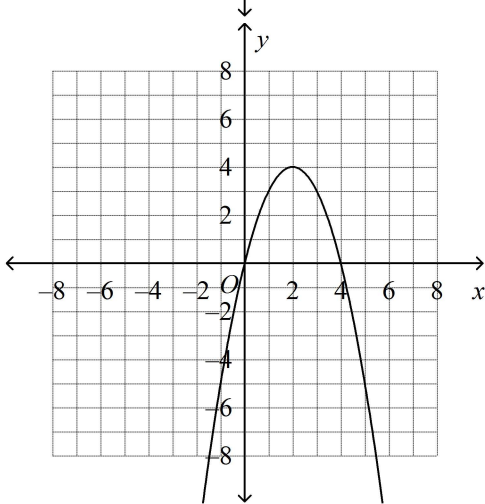
a.



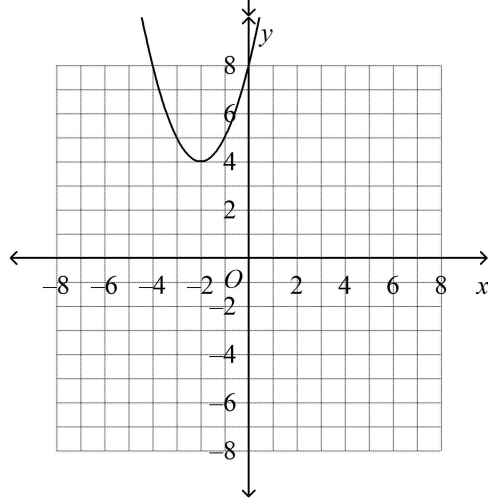
c.



b.



d.



12. Solve by factoring.

$$4x^2 + 10x - 24 = 0$$

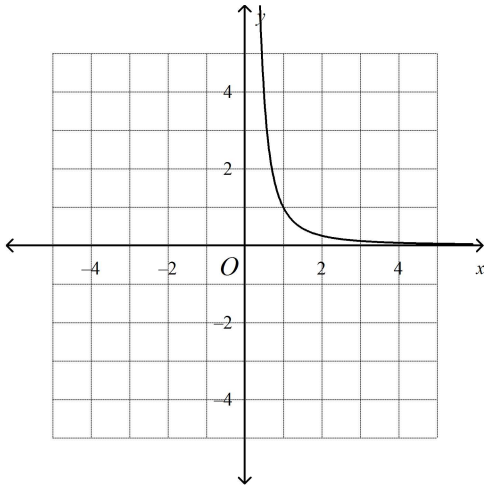
a. $\frac{3}{2}, -1$

b. $-4, \frac{3}{2}$

c. $4, -1$

d. $-4, 4$

- _____ 13. Find the domain and range of the relation and determine whether it is a function.

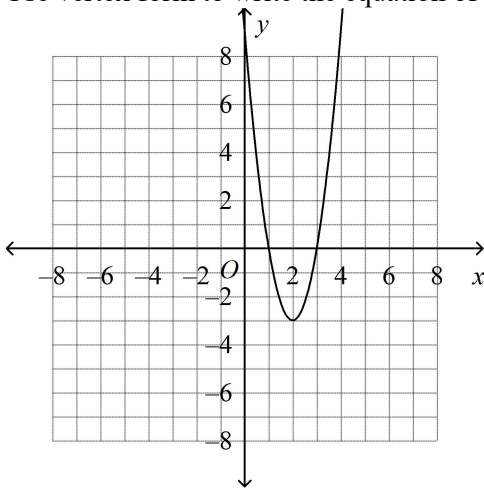


- Domain: all real numbers; range: all real numbers; yes, it is a function
- Domain: $x > 0$; range: $y > 0$; yes, it is a function.
- Domain: positive integers; range: positive integers; no, it is not a function.
- Domain: $x \geq 0$; range: $y \leq 0$; no, it is not a function.

Solve the equation by finding square roots.

- _____ 14. $6x^2 = 42$
- $-\sqrt{7}, \sqrt{42}$
 - $\frac{-\sqrt{42}}{6}, \frac{\sqrt{42}}{6}$
 - $\sqrt{7}, -\sqrt{7}$
 - $\sqrt{7}$
- _____ 15. A manufacturer determines that the number of drills it can sell is given by the formula $D = -4p^2 + 160p - 305$, where p is the price of the drills in dollars.
- At what price will the manufacturer sell the maximum number of drills?
 - What is the maximum number of drills that can be sold?
- \$80; 13,105 drills
 - \$22; 1,289 drills
 - \$40; 305 drills
 - \$20; 1,295 drills

- _____ 16. Use vertex form to write the equation of the parabola.



- a. $y = (x - 2)^2 - 3$ c. $y = 3(x - 2)^2 - 3$
 b. $y = 3(x + 2)^2 - 3$ d. $y = 3(x + 2)^2 + 3$
- _____ 17. Simplify $\sqrt{-63}$ using the imaginary number i .
- a. $3\sqrt{-7}$ b. $i\sqrt{63}$ c. $-3\sqrt{7}$ d. $3i\sqrt{7}$

Use the Quadratic Formula to solve the equation.

- _____ 18. $x^2 + x - 2 = 0$
- a. 4, -5 b. 2, -4 c. 2, -1 d. 1, -2

Write a quadratic equation with the given roots. Write the equation in the form $ax^2 + bx + c = 0$, where a , b , and c are integers.

- _____ 19. -5 and -1
- a. $x^2 + 4x - 5 = 0$ c. $x^2 - 6x - 5 = 0$
 b. $x^2 - 4x - 5 = 0$ d. $x^2 + 6x + 5 = 0$
- _____ 20. Identify the vertex and the y-intercept of the graph of the function $y = 2(x + 2)^2 - 2$.
- a. vertex: (2, 2);
y-intercept: 8 c. vertex: (2, -2);
y-intercept: 6
 b. vertex: (-2, -2);
y-intercept: 6 d. vertex: (-2, 2);
y-intercept: 2

Short Answer

21. Use the graph of $y = (x - 3)^2 + 5$.
- If you translate the parabola to the right 2 units and down 7 units, what is the equation of the new parabola in vertex form?
 - If you translate the original parabola to the left 2 units and up 7 units, what is the equation of the new parabola in vertex form?
 - How could you translate the new parabola in part (a) to get the new parabola in part (b)?

Name: _____

ID: C

22. Graph $y = 3x^2 - 36x + 111$. What is the minimum value of the function?

