

Quiz#3 Part 1 - Chapter 3.1 - 3.3 New Questions (2 points each).

Multiple Choice

Identify the choice that best completes the statement or answers the question.
Write your answer in the space provided left of the question.

Solve each equation using the indicated method.

A 1. Solve using square roots: $3(x+2)^2 - 9 = -4$

$$3(x+2)^2 = 5$$

$$(x+2)^2 = \frac{5}{3}$$

$$x+2 = \sqrt{\frac{5}{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$$

$$x+2 = \pm \frac{\sqrt{15}}{3}$$

$$x = -2 \pm \frac{\sqrt{15}}{3}$$

a. $x = -2 \pm \frac{\sqrt{15}}{3}$

c. $x = -17$ and $x = 13$

b. $x = 2 \pm \frac{\sqrt{15}}{3}$

d. $x = -2 \pm \sqrt{15}$

A 2. Solve by factoring: $-2y + 5 + y^2 = -6y + 2y^2$

$$0 = y^2 - 4y - 5$$

a. $y = -1$ and $y = 5$

c. no real solution

b. $y = -5$

d. $y = -5$ and $y = 1$

$$0 = (y-5)(y+1)$$

$$y = 5, -1$$

$$\begin{array}{r} -5 \\ \times \\ -4 \\ \hline \end{array}$$

C 3. Solve by completing the square: $x^2 - 12x + 29 = 0$

a. $x = -6 \pm i\sqrt{7}$

c. $x = 6 \pm \sqrt{7}$

b. $x = 6 \pm i\sqrt{7}$

d. $x = -6 \pm \sqrt{7}$

$$x^2 - 12x + c = -29 + c$$

$$x^2 - 12x + 36 = -29 + 36$$

$$(x-6)^2 = 7$$

$$x-6 = \pm\sqrt{7}$$

$$x = 6 \pm \sqrt{7}$$

Find the zero(s) of the function.

A 4. $g(x) = 3x^2 + 42 \rightarrow 0 = 3x^2 + 42$

a. $x = \pm i\sqrt{14}$

c. $x = i\sqrt{14}$

b. $x = \pm\sqrt{14}$

d. $x = -i\sqrt{14}$

$$-42 = 3x^2$$

$$-14 = x^2$$

$$\pm i\sqrt{14} = x$$

Perform the operation. Write the answer in standard form.

C 5. $(8+20i) + (-17+4i)$

a. $24 - 9i$

c. $-9 + 24i$

b. $-25 + 24i$

d. $28 - 13i$

$$8 - 17 + 20i + 4i$$

$$-9 + 24i$$

$$c = \left(\frac{-2}{2}\right)^2 = (-1)^2 = +1$$

1. The height y (in feet) of a dodgeball t seconds after it is thrown can be modeled by the function $y = -16t^2 + 32t + 4$. Write the function in vertex form. Then find the maximum height of the dodgeball.

$$y = -16(t^2 - 2t + c) + 4 - c(-16)$$

$$y = -16(t^2 - 2t + 1) + 4 - 1(-16)$$

$$y = -16(t-1)^2 + 4 + 16$$

$$y = -16(t-1)^2 + 20$$

Max height: 20

Find the square root of the number.

2. $\sqrt{-32} \rightarrow \sqrt{32 \cdot -1} \rightarrow \sqrt{32} \cdot \sqrt{-1}$

$$\downarrow$$

$$\sqrt{16 \cdot 2} \cdot \sqrt{-1}$$

$$\downarrow$$

$$\sqrt{16} \cdot \sqrt{2} \cdot \sqrt{-1} \rightarrow \boxed{\pm 4i\sqrt{2}}$$

Perform the operation. Write the answer in standard form.

3. $(-1 + 4i)(9 - 4i)$ $i^2 = -1$

$$-9 + 4i + 36i - 16i^2$$

$$-9 + 40i - 16(-1)$$

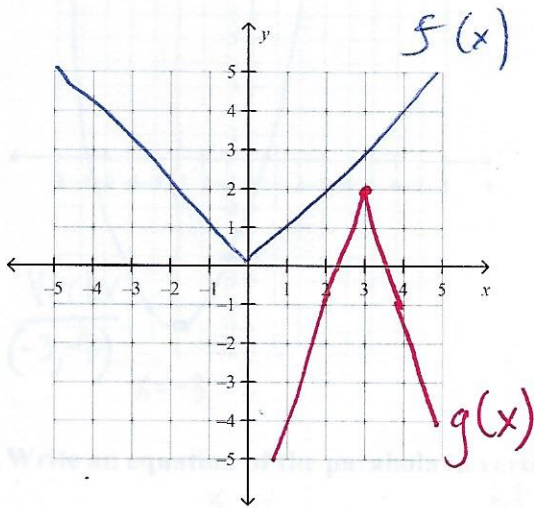
$$-9 + 40i + 16$$

$$7 + 40i$$

Quiz #3 Part 2 - Ch. 1 & Ch. 2 Review Questions (3 points each). Please BOX your answer for free-response questions & write your answer in the space provided for multiple-choice!

Graph the function and its parent function. Then describe the transformation.

1. $g(x) = -3|x - 3| + 2$



- Reflection in x-axis
- Vertical stretch by 3
- Shift right 3 units
- Shift ~~down~~ up 2 units

Write a function g whose graph represents the indicated transformation of the graph of f .

C 2. $f(x) = 2x + 4$; translation 7 units left
 $h = -7$

- a. $g(x) = -2x + 11$
- b. $g(x) = -2x + 18$

- c. $g(x) = 2x + 18$
- d. $g(x) = 2x + 11$

$2(x+7)+4 \rightarrow 2x+14+4$
 $2x+18$

C 3. $f(x) = |3x + 8| - 7$; reflection in the x-axis

- a. $g(x) = |3x + 8| + 7$
- b. $g(x) = -|3x + 8| - 7$

- c. $g(x) = -|3x + 8| + 7$
- d. $g(x) = -|3x - 8| - 7$

$-f(x) \rightarrow -(|3x+8|-7)$
 $-|3x+8|+7$

Write a rule for g described by the transformations of the graph of f . Then identify the vertex.

A 4. $f(x) = x^2$; vertical shrink by a factor of $\frac{1}{3}$ and a reflection in the x-axis, followed by a translation 3 units down.
 $h(x) = \frac{1}{3}x^2$ $g(x)$

a. $g(x) = -\frac{1}{3}x^2 - 3; (0, -3)$

c. $g(x) = \frac{1}{3}(x-3)^2; (3, 0)$

b. $g(x) = \frac{1}{3}x^2 - 3; (0, -3)$

d. $g(x) = -3x^2 - 3; (0, -3)$

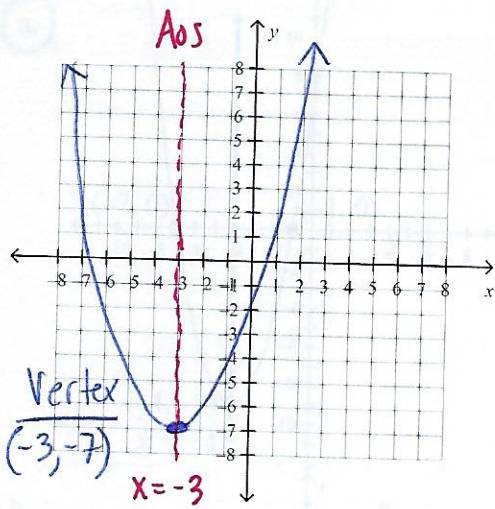
$h(x) = -\frac{1}{3}x^2$

$g(x) = \boxed{-\frac{1}{3}x^2 - 3}$

Graph the function. Label the vertex and axis of symmetry.

5. $h(x) = x^2 + 6x + 2$

$a = 1$
 $b = 6$
 $c = 2$



$$AoS = \frac{-b}{2a} = \frac{-6}{2(1)} = \frac{-6}{2} = -3$$

$$y = (-3)^2 + 6(-3) + 2$$

$$y = 9 - 18 + 2 = -7$$

$a > 0$, so \uparrow

Write an equation of the parabola in vertex form.

$$y = a(x-h)^2 + k$$

C 6. passes through $(10, -3)$ and has vertex $(5, 7)$

$$-3 = a(10-5)^2 + 7 \rightarrow -10 = a(5)^2$$

a. $y = -2.5(x+5)^2 + 7$

c. $y = -0.4(x-5)^2 + 7$

$$-10 = 25a$$

b. $y = -0.4(x+5)^2 + 7$

d. $y = -2.5(x-5)^2 + 7$

$$\frac{-10}{25} = a$$

Describe the transformation of $f(x) = x^2$ represented by g .

A 7. $g(x) = -\left(\frac{1}{4}x\right)^2$ *H. Stretch by 4*

Reflection about x-axis

a. The graph of g is a horizontal stretch by a factor of 4 and a reflection in the x -axis of the graph of f .

c. The graph of g is a translation $\frac{1}{4}$ unit up followed by a reflection in the x -axis of the graph of f .

b. The graph of g is a horizontal shrink by a factor of $\frac{1}{4}$ and a reflection in the x -axis of the graph of f .

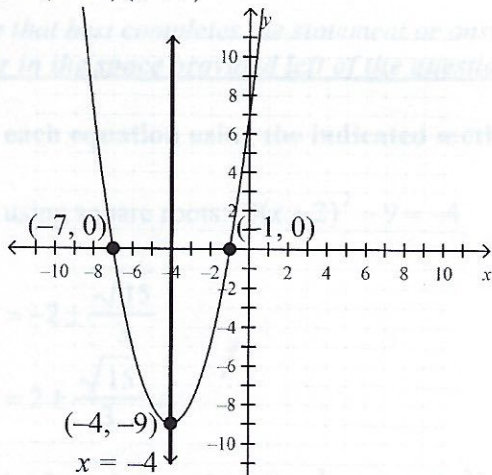
d. The graph of g is a translation $\frac{1}{4}$ unit down of the graph of f .

Identify the x-intercept(s) and vertex of the graph of the function.

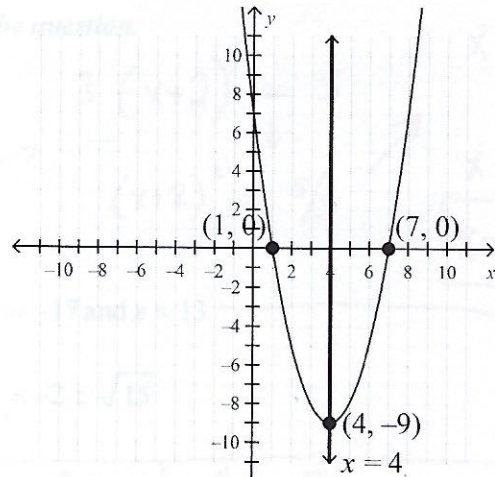
A

8. $f(x) = (x+1)(x+7)$

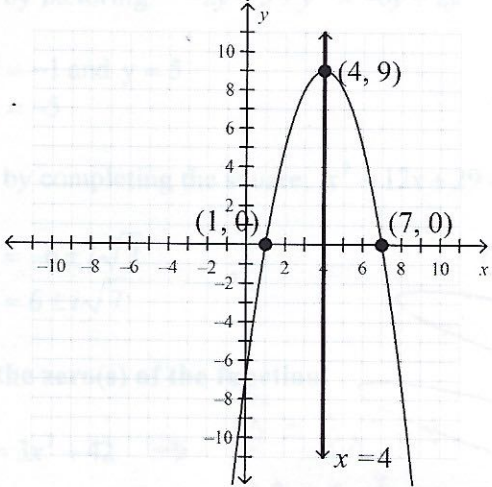
a.



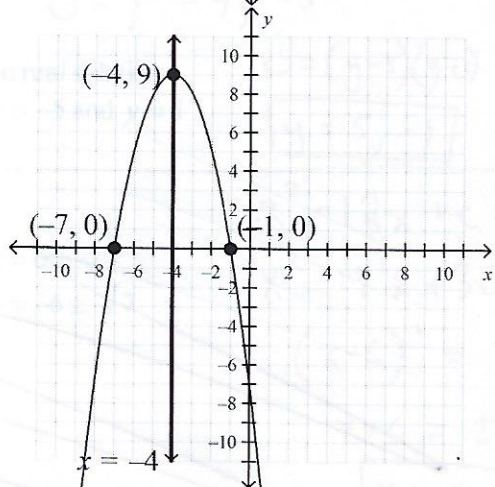
c.



b.



d.



$p = -1$
 $q = -7$

$$AoS = \frac{p+q}{2} = \frac{-1-7}{2} = \frac{-8}{2} = -4$$

$$y = (-4+1)(-4+7)$$

$$y = (-3)(3)$$

$$y = -9$$