

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.

B

1. Solve using square roots:  $3(x+8)^2 - 6 = 1$

a.  $x = 8 \pm \frac{\sqrt{21}}{3}$

b.  $x = -8 \pm \frac{\sqrt{21}}{3}$

c.  $x = -8 \pm \sqrt{21}$

d.  $x = -29$  and  $x = 13$

$3(x+8)^2 = 7$

$(x+8)^2 = 7/3$

$x+8 = \pm \sqrt{\frac{7}{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$

$x+8 = \pm \frac{\sqrt{21}}{3}$

$x = -8 \pm \frac{\sqrt{21}}{3}$

B

2. Solve by factoring:  $-y + 36 + y^2 = -6y + 2y^2$

a.  $y = -36$

b.  $y = 9$  and  $y = -4$

c.  $y = 4$  and  $y = -9$

d. no real solution

$0 = y^2 - 5y - 36$

$0 = (y-9)(y+4)$

$y = 9, -4$

~~$\begin{matrix} -36 & & 4 \\ -9 & & -5 \end{matrix}$~~

D

3. Solve by completing the square:  $x^2 - 10x + 15 = 0$

a.  $x = -5 \pm i\sqrt{10}$

b.  $x = -5 \pm \sqrt{10}$

c.  $x = 5 \pm i\sqrt{10}$

d.  $x = 5 \pm \sqrt{10}$

$x^2 - 10x + c = -15 + c$

$x^2 - 10x + 25 = -15 + 25$

$(x-5)^2 = 10$

$x-5 = \pm\sqrt{10} \rightarrow$

$x = 5 \pm \sqrt{10}$

Find the zero(s) of the function.

B

4.  $g(x) = 6x^2 + 30$

a.  $x = i\sqrt{5}$

b.  $x = \pm i\sqrt{5}$

c.  $x = \pm\sqrt{5}$

d.  $x = -i\sqrt{5}$

$0 = 6x^2 + 30$

$-30 = 6x^2$

$-5 = x^2$

$\pm i\sqrt{5} = x$

Perform the operation. Write the answer in standard form.

D

5.  $(-6 + 18i) - (14 + 17i)$

a.  $12 - 31i$

b.  $20 + 35i$

c.  $1 - 20i$

d.  $-20 + i$

$-6 - 14 + 18i - 17i$

$-20 + i$

$$c = \left(\frac{-4}{2}\right)^2 = (-2)^2 = 4$$

Short Answer. **BOX YOUR ANSWER**

1. The height  $y$  (in feet) of a dodgeball  $t$  seconds after it is thrown can be modeled by the function  $y = -16t^2 + 64t + 7$ . Write the function in vertex form. Then find the maximum height of the dodgeball.

$$y = -16(t^2 - 4t + c) + 7 - c(-16)$$

$$y = -16(t^2 - 4t + 4) + 7 - 4(-16)$$

$$y = -16(t-2)^2 + 7 + 64$$

$$y = -16(t-2)^2 + 71$$

Max height = 71

Find the square root of the number.

2.  $\sqrt{-18} \rightarrow \sqrt{18 \cdot -1} \rightarrow \sqrt{18} \cdot \sqrt{-1}$

$$\downarrow$$

$$\sqrt{9 \cdot 2} \cdot \sqrt{-1}$$

$$\sqrt{9} \cdot \sqrt{2} \cdot \sqrt{-1} \rightarrow \boxed{\pm 3i\sqrt{2}}$$

Perform the operation. Write the answer in standard form.

3.  $(-5-3i)(-6+2i)$

$$i^2 = -1$$

$$30 - 10i + 18i - 6i^2$$

$$30 + 8i - 6(-1)$$

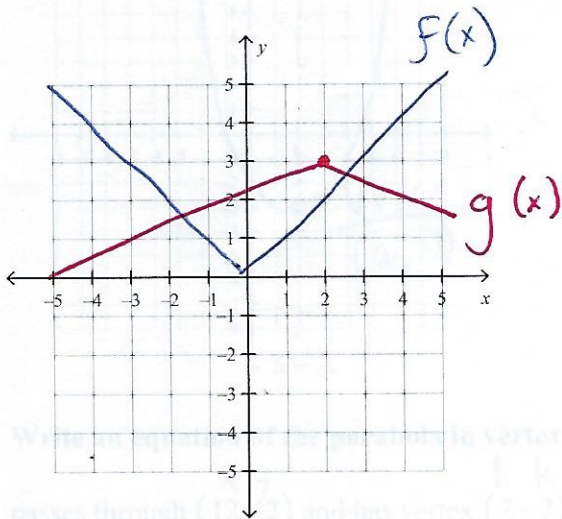
$$30 + 8i + 6$$

$$\boxed{36 + 8i}$$

**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.  $g(x) = -\frac{3}{4}|x-2|+3$



- Reflection about x-axis
- Vertical Shrink by 3/4
- Shift right 2 units
- Shift up 3 units

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

D

2.  $f(x) = |x-6|+8$ ; translation 3 units left  $\rightarrow f(x-h) \rightarrow$   $\boxed{|x-3|+8}$   
 $h = -3$

- a.  $g(x) = -|x-6|-3$       c.  $g(x) = -|x-3|+8$   
 b.  $g(x) = |x-6|-3$       d.  $g(x) = |x-3|+8$

B

3.  $f(x) = -|4x|+4$ ; reflection in the x-axis  $\rightarrow -f(x) \rightarrow$   $\boxed{|4x|-4}$

- a.  $g(x) = -|4x|-4$       c.  $g(x) = |4x|+4$   
 b.  $g(x) = |4x|-4$       d.  $g(x) = -|4x|+4$

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  $\frac{1}{4}$  and a reflection in the x-axis, followed by a translation 3 units up.  $g(x)$

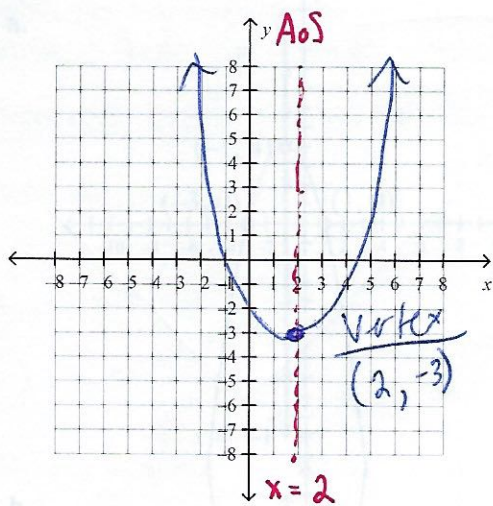
- a.  $g(x) = -\frac{1}{4}x^2+3; (0,3)$       c.  $g(x) = \frac{1}{4}x^2+3; (0,3)$   
 b.  $g(x) = \frac{1}{4}(x+3)^2; (-3,0)$       d.  $g(x) = -4x^2+3; (0,3)$

$h(x) = -\frac{1}{4}x^2$   
 $g(x) = \boxed{-\frac{1}{4}x^2+3}$

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

5.  $h(x) = x^2 - 4x + 1$

$a = 1$   
 $b = -4$   
 $c = 1$



$$AoS = \frac{-b}{2a} = \frac{-(-4)}{2(1)} = \frac{4}{2} = 2$$

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

$$y = 4 - 8 + 1 = -3$$

$A > 0$ , so  $\cup$

Write an equation of the parabola in vertex form.

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

6. passes through  $(12, -2)$  and has vertex  $(7, -7)$

$$-2 = a(12-7)^2 - 7 \rightarrow -2 = a(5)^2 - 7$$

a.  $y = 0.2(x+7)^2 - 7$

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

c.  $y = 0.2(x-7)^2 - 7$

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

$$5 = 25a$$

$$\frac{5}{25} = a$$

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

7.  $g(x) = -(4x)^2$

*H. Shrink by 1/4*

*reflection in x-axis*

a. The graph of  $g$  is a translation 4 units down of the graph of  $f$ .

c. The graph of  $g$  is a translation 4 units up followed by a reflection in the  $x$ -axis of the graph of  $f$ .

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

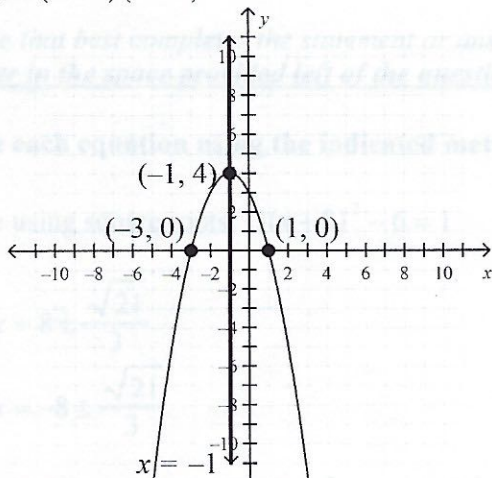
d. The graph of  $g$  is a horizontal shrink by a factor of  $\frac{1}{4}$  and a reflection in the  $x$ -axis of the graph of  $f$ .

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

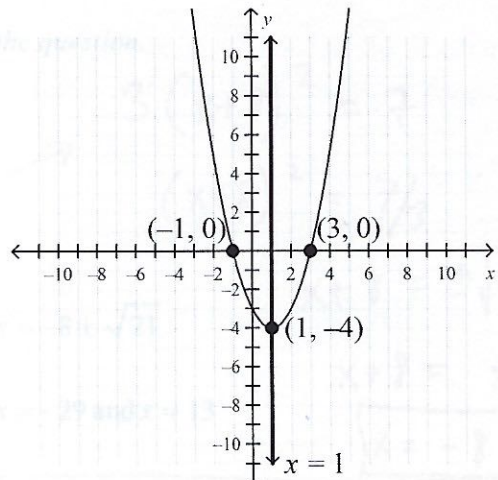
C

8.  $f(x) = (x-3)(x+1)$

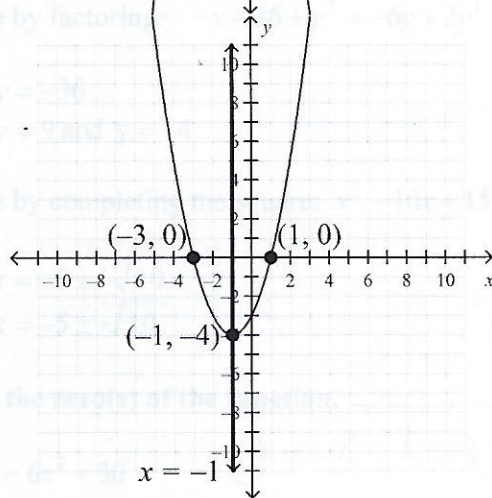
a.



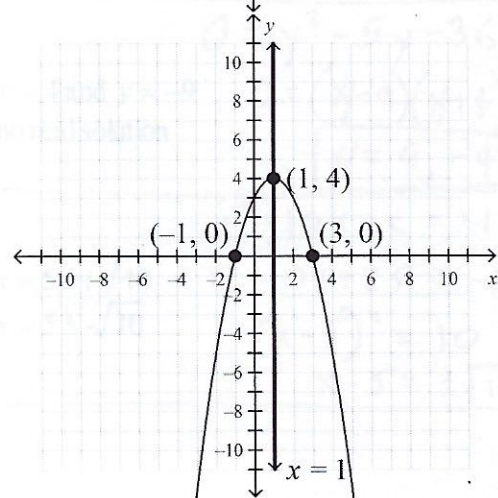
c.



b.



d.



$$p = 3$$

$$q = -1$$

$$AoS = \frac{p+q}{2} = \frac{3-1}{2} = \frac{2}{2} = 1$$

$$y = (1-3)(1+1)$$

$$y = (-2)(2)$$

$$y = -4$$