

Aim: How we can solve verbal problems leading to a Quadratic Equations?

Do Now – Complete the following 12 questions with your group. After you complete your work enter the answer into your [www.mygradebook.com](http://www.mygradebook.com) account.

1.

What are the solutions to the equation  $x^2 - 8x = 24$ ?

- (1)  $x = 4 \pm 2\sqrt{10}$       (3)  $x = 4 \pm 2\sqrt{2}$   
 (2)  $x = -4 \pm 2\sqrt{10}$       (4)  $x = -4 \pm 2\sqrt{2}$

2.

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)

3.

What is the solution of the equation  $2(x + 2)^2 - 4 = 28$ ?

- (1) 6, only      (3) 2 and -6  
 (2) 2, only      (4) 6 and -2

4.

Which expression is equivalent to  $16x^4 - 64$ ?

- (1)  $(4x^2 - 8)^2$       (3)  $(4x^2 + 8)(4x^2 - 8)$   
 (2)  $(8x^2 - 32)^2$       (4)  $(8x^2 + 32)(8x^2 - 32)$

5.

What are the solutions to the equation  $x^2 - 8x = 10$ ?

- (1)  $4 \pm \sqrt{10}$       (3)  $-4 \pm \sqrt{10}$   
 (2)  $4 \pm \sqrt{26}$       (4)  $-4 \pm \sqrt{26}$

6.

If  $4x^2 - 100 = 0$ , the roots of the equation are

- (1) -25 and 25      (3) -5 and 5  
 (2) -25, only      (4) -5, only

7.

Which expression is equivalent to  $x^4 - 12x^2 + 36$ ?

- (1)  $(x^2 - 6)(x^2 - 6)$       (3)  $(6 - x^2)(6 + x^2)$   
 (2)  $(x^2 + 6)(x^2 + 6)$       (4)  $(x^2 + 6)(x^2 - 6)$

8.

The zeros of the function  $f(x) = (x + 2)^2 - 25$  are

- (1) -2 and 5      (3) -5 and 2  
 (2) -3 and 7      (4) -7 and 3

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9.

The zeros of the function  $f(x) = 3x^2 - 3x - 6$  are

- (1) -1 and -2                      (3) 1 and 2  
 (2) 1 and -2                      (4) -1 and 2

10.

If  $f(x) = x^2 - 2x - 8$  and  $g(x) = \frac{1}{4}x - 1$ , for which values of  $x$  is  $f(x) = g(x)$ ?

- (1) -1.75 and -1.438            (3) -1.438 and 0  
 (2) -1.75 and 4                  (4) 4 and 0

11.

If Lylah completes the square for  $f(x) = x^2 - 12x + 7$  in order to find the minimum, she must write  $f(x)$  in the general form  $f(x) = (x - a)^2 + b$ . What is the value of  $a$  for  $f(x)$ ?

- (1) 6                                  (3) 12  
 (2) -6                                (4) -12

12.

The solution of the equation  $(x + 3)^2 = 7$  is

- (1)  $3 \pm \sqrt{7}$                       (3)  $-3 \pm \sqrt{7}$   
 (2)  $7 \pm \sqrt{3}$                       (4)  $-7 \pm \sqrt{3}$

## HOMEWORK # 12

13.

Which expression is equivalent to  $36x^2 - 100$ ?

- (1)  $4(3x - 5)(3x - 5)$         (3)  $2(9x - 25)(9x - 25)$   
 (2)  $4(3x + 5)(3x - 5)$         (4)  $2(9x + 25)(9x - 25)$

14.

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?

- (1) The rocket was launched from a height of 180 feet.  
 (2) The maximum height of the rocket occurred 3 seconds after launch.  
 (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.

15.

What are the solutions to the equation  $3x^2 + 10x = 8$ ?

- (1)  $\frac{2}{3}$  and -4                      (3)  $\frac{4}{3}$  and -2  
 (2)  $-\frac{2}{3}$  and 4                      (4)  $-\frac{4}{3}$  and 2

16.

The function  $f(x) = 3x^2 + 12x + 11$  can be written in vertex form as

- (1)  $f(x) = (3x + 6)^2 - 25$   
 (2)  $f(x) = 3(x + 6)^2 - 25$   
 (3)  $f(x) = 3(x + 2)^2 - 1$   
 (4)  $f(x) = 3(x + 2)^2 + 7$

17.

The expression  $49x^2 - 36$  is equivalent to

- (1)  $(7x - 6)^2$                       (3)  $(7x - 6)(7x + 6)$   
 (2)  $(24.5x - 18)^2$                 (4)  $(24.5x - 18)(24.5x + 18)$

18.

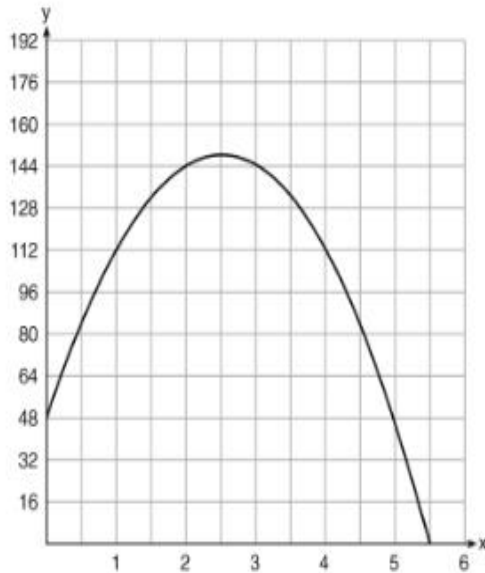
The zeros of the function  $f(x) = 2x^3 + 12x - 10x^2$  are

- (1) {2, 3}                              (3) {0, 2, 3}  
 (2) {-1, 6}                            (4) {0, -1, 6}

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19.

A ball is thrown into the air from the edge of a 48-foot-high cliff so that it eventually lands on the ground. The graph below shows the height,  $y$ , of the ball from the ground after  $x$  seconds.



For which interval is the ball's height always *decreasing*?

- (1)  $0 \leq x \leq 2.5$                       (3)  $2.5 < x < 5.5$   
 (2)  $0 < x < 5.5$                         (4)  $x \geq 2$

21.

If the area of a rectangle is expressed as  $x^4 - 9y^2$ , then the product of the length and the width of the rectangle could be expressed as

- (1)  $(x - 3y)(x + 3y)$   
 (2)  $(x^2 - 3y)(x^2 + 3y)$   
 (3)  $(x^2 - 3y)(x^2 - 3y)$   
 (4)  $(x^4 + y)(x - 9y)$

20.

Keith determines the zeros of the function  $f(x)$  to be  $-6$  and  $5$ . What could be Keith's function?

- (1)  $f(x) = (x + 5)(x + 6)$   
 (2)  $f(x) = (x + 5)(x - 6)$   
 (3)  $f(x) = (x - 5)(x + 6)$   
 (4)  $f(x) = (x - 5)(x - 6)$

22.

What are the zeros of the function  $f(x) = x^2 - 13x - 30$ ?

- (1)  $-10$  and  $3$                               (3)  $-15$  and  $2$   
 (2)  $10$  and  $-3$                               (4)  $15$  and  $-2$

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23.

Which quadratic function has the largest maximum?

$$h(x) = (3-x)(2+x)$$

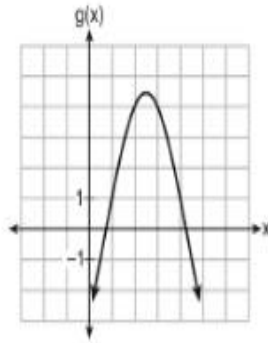
(1)

$$k(x) = -5x^2 - 12x + 4$$

(3)

| x  | f(x) |
|----|------|
| -1 | -3   |
| 0  | 5    |
| 1  | 9    |
| 2  | 9    |
| 3  | 5    |
| 4  | -3   |

(2)



(4)

24.

When directed to solve a quadratic equation by completing the square, Sam arrived at the equation

$\left(x - \frac{5}{2}\right)^2 = \frac{13}{4}$ . Which equation could have been the original equation given to Sam?

(1)  $x^2 + 5x + 7 = 0$

(3)  $x^2 - 5x + 7 = 0$

(2)  $x^2 + 5x + 3 = 0$

(4)  $x^2 - 5x + 3 = 0$

### Answers to Homework # 12

Please select the correct answers number for each question. There are more answers than questions. Answers may be repeated.

1) (1)

2) (2)

3) (3)

4) (4)