

# QUIZ

Oct 21-12:39 PM

## HW 3 - 6: Answers

Bring smartphone tomorrow if you have one  
with a FREE QR reader app ready to use.

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

2.  $(x + 3)^2 = -8(y + 1)$

3.  $(x - 1)^2 = -2(y - 5)$

4.  $\{(-2.7, -19.4), (2.7, -8.6)\}$

5.  $k = -24$

Aug 13-9:18 AM

Write the equations of the parabolas in standard form. Find all required parts and graph.

1.  $x^2 + 4x - 4y + 12 = 0$

$$x^2 + 4x + 4 = 4y - 12 + 4$$

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

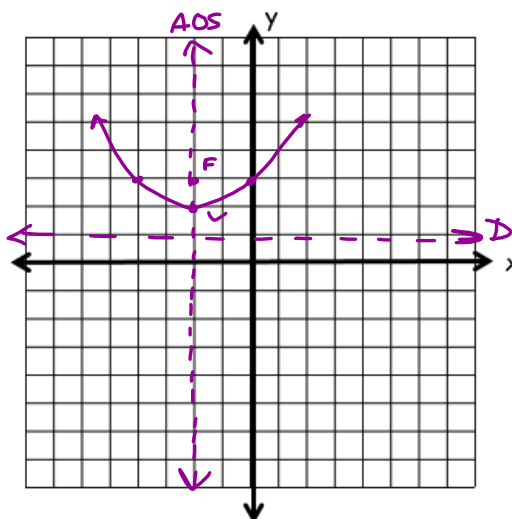
Solve for y:

$$y = \frac{1}{4}(x+2)^2 + 2$$

$|4p| = \underline{4}$   $p = \underline{1}$

Vertex:  $\underline{(-2, 2)}$  Focus:  $\underline{(-2, 3)}$

Directrix:  $\underline{y = 1}$  AOS:  $\underline{x = -2}$



2.  $x^2 + 6x + 8y + 17 = 0$

$$x^2 + 6x + 9 = -8y - 17 + 9$$

$$(x+3)^2 = -8(y+1)$$

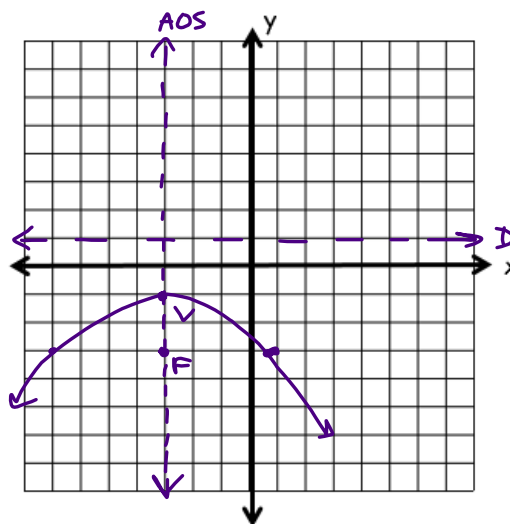
Solve for y:

$$y = -\frac{1}{8}(x+3)^2 - 1$$

$|4p| = \underline{8}$   $p = \underline{-2}$

Vertex:  $\underline{(-3, -1)}$  Focus:  $\underline{(-3, -3)}$

Directrix:  $\underline{y = 1}$  AOS:  $\underline{x = -3}$



3.  $x^2 - 2x + 2y - 9 = 0$

$$x^2 - 2x + 1 = -2y + 9 + 1$$

$$(x-1)^2 = -2(y-5)$$

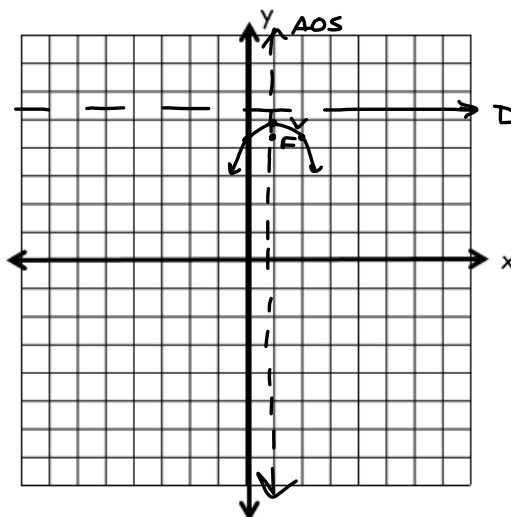
Solve for y:

$$y = -\frac{1}{2}(x-1)^2 + 5$$

$$|4p| = \underline{2} \quad p = \underline{-\frac{1}{2}}$$

Vertex:  $(1, 5)$  Focus:  $(1, 4.5)$

Directrix:  $y = 5.5$  AOS:  $x = 1$



4. Find the solutions to the nearest tenth using your graphing calculator. Include a sketch with labeled points of intersection and the window you used to see the graph with all points of intersection.

$$y = -3x^2 + 2x + 8$$

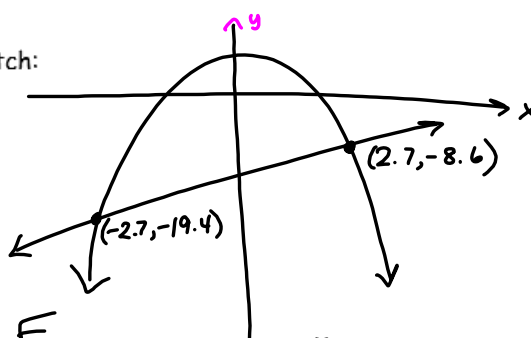
$$y = 2x - 14$$

Solution:  $\{(-2.7, -19.4), (2.7, -8.6)\}$

Xmin  $\underline{-10}$  Ymin  $\underline{-30}$

Xmax  $\underline{10}$  Ymax  $\underline{10}$

Sketch:

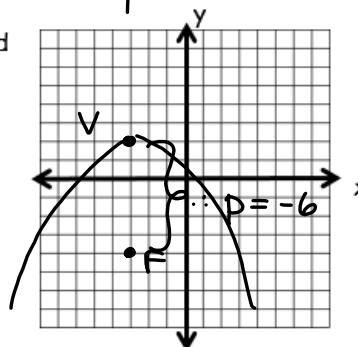


5. The focus of the parabola  $(x+3)^2 = k(y-2)$  is  $(-3, -4)$ ; find  $k$ . The use of the grid is optional. Justify your answer.

vertex:  $(-3, 2)$  from equation

$$p = -6$$

$$k = 4p \rightarrow k = -24$$



With your group, answer each of the following questions. Show work or write an explanation for each question. Your homework tonight is to finish this worksheet.

Do #1 together in Class

Key will be online tonight to check before class.

Using your graphing calculator, solve the following systems of equations. Round your answers to the nearest hundredth. State the window you used for each system.

$$y = -3x^2 - 5x + 2$$

$$y = 3x - 4$$

$$\{(-3.28, -13.83), (.61, -2.17)\}$$

$$x_{min} = -10$$

$$x_{max} = 10$$

$$y_{min} = -20$$

$$y_{max} = 10$$

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Using your graphing calculator, solve the following systems of equations. Round your answers to the nearest hundredth. State the window you used for each system.

1.  $y = -3x^2 - 5x + 2$   
 $y = 3x - 4$

2.  $y = \frac{1}{2}x^2 - 4x + 1$   
 $y = 2x + 3$

Solution:  $\{(.61, -2.17), (-3.27, -13.83)\}$  Solution:  $\{(-.32, 2.35), (12.32, 27.65)\}$

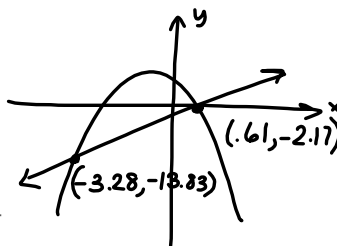
Window:

Xmin -10

Xmax 10

Ymin -30

Ymax 10



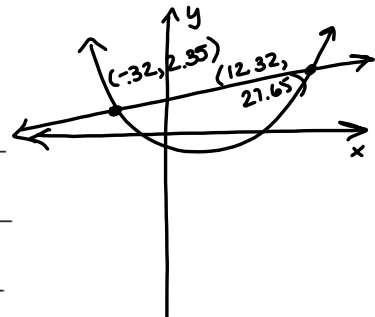
Window:

Xmin -10

Xmax 15

Ymin -5

Ymax 50



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For many of these questions, you will use your calculator. You may need to change your window, use your table to help if necessary.

3. June 2017 #5

If  $f(x) = 3|x| - 1$  and  $g(x) = 0.03x^3 - x + 1$ , an approximate solution for the equation  $f(x) = g(x)$  is

- a. 1.96  
 c. (-0.99, 1.96)  
 b. 11.29  
 d. (11.29, 32.87)

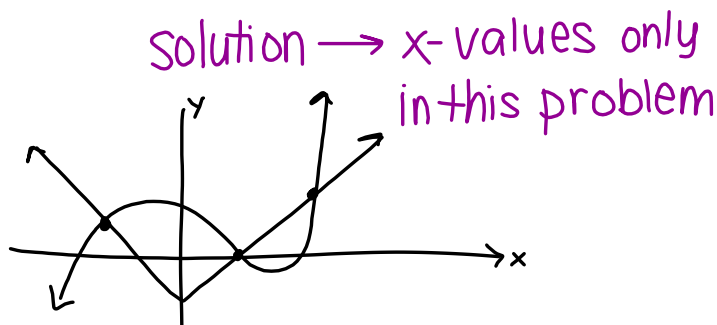
Window:

Xmin -5

Xmax 15

Ymin -5

Ymax 60



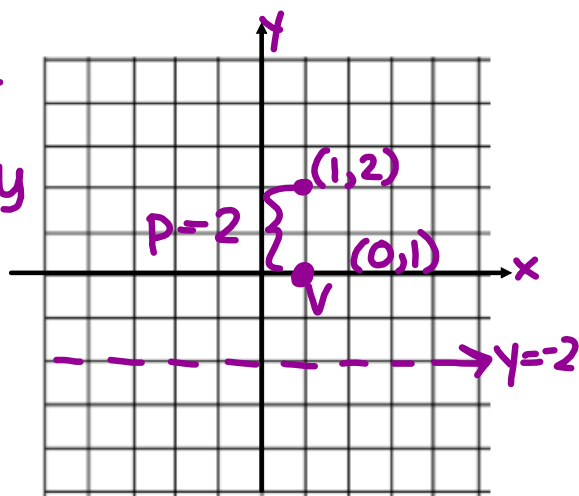
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4. June 2017 #17

A parabola has its focus at  $(1, 2)$  and its directrix is  $y = -2$ . The equation of the parabola could be

- a.  $y = 8(x + 1)^2$   
 b.  $y = 8(x - 1)^2$   
 c.  $y = \frac{1}{8}(x + 1)^2$   
 d.  $y = \frac{1}{8}(x - 1)^2$

$x^2 = +$   
 $(x-1)^2 = 8y$



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5. August 2016 #19

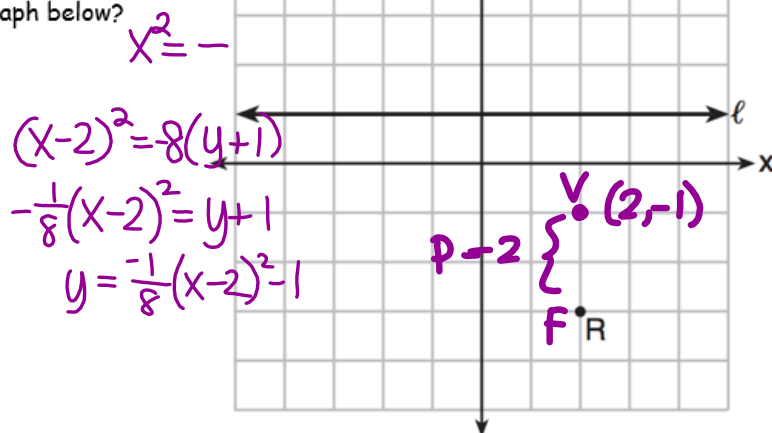
Which equation represents the set of points equidistant from line  $\ell$  and point R shown on the graph below?

a.  $y = -\frac{1}{8}(x+2)^2 + 1$

b.  $y = -\frac{1}{8}(x+2)^2 - 1$

c.  $y = -\frac{1}{8}(x-2)^2 + 1$

d.  $y = -\frac{1}{8}(x-2)^2 - 1$



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6. August 2016 #3

To the *nearest tenth*, the value of  $x$  that satisfies  $2^x = -2x + 11$  is

a. 2.5

b. 5.8

c. 2.6

d. 5.9

Window:

Xmin -10Xmax 10Ymin -10Ymax 10

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7. June 2019 #35

Determine an equation for the parabola with focus (4, -1) and directrix  $y = -5$ .

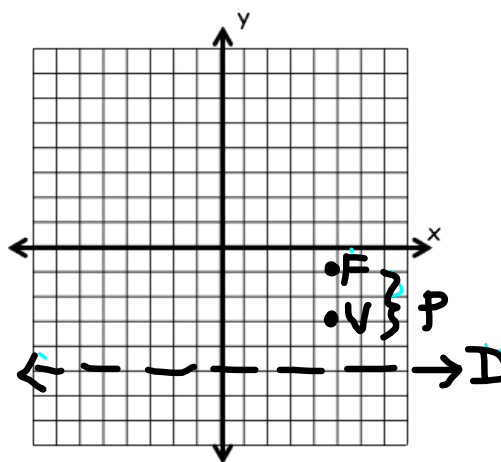
$$p = 2$$

$$4p = 8$$

vertex: (4, -3)

EQ:

$$(x - 4)^2 = 8(y + 3)$$



8. June 2016 #33

Solve the system of equations shown below algebraically.

$$\begin{aligned} x + y &= 5 \\ x &= 7 & x &= 3 \\ 7 + y &= 5 & 3 + y &= 5 \\ y &= -2 & y &= 2 \\ \{(7, -2), (3, 2)\} \end{aligned}$$

$$\begin{aligned} (x - 3)^2 + (y + 2)^2 &= 16 \\ 2x + 2y &= 10 \quad \div 2 \\ x + y &= 5 \\ y &= 5 - x \\ (x - 3)^2 + (5 - x + 2)^2 &= 16 \\ (x - 3)^2 + (7 - x)^2 &= 16 \\ x^2 - 6x + 9 + x^2 - 14x + 49 &= 16 \\ 2x^2 - 20x + 58 &= 16 \quad \div 2 \\ x^2 - 10x + 29 &= 8 \\ x^2 - 10x + 21 &= 0 \\ (x - 7)(x - 3) &= 0 \\ x &= 7 \quad x = 3 \end{aligned}$$

9. The parabola described by the equation  $y = \frac{1}{12}(x - 2)^2 + 2$  has the directrix at  $y = -1$ .  
The focus of the parabola is:

- a. (2, -1)      b. (2, 2)  
c. (2, 3)      d. (2, 5)

$$\begin{aligned}y &= \frac{1}{12}(x - 2)^2 + 2 \\(y - 2) &= \frac{1}{12}(x - 2)^2 \\(x - 2)^2 &= 12(y - 2) \\ \text{vertex: } &(2, 2) \\ p &= 3\end{aligned}$$

