

1.) Factor completely: $\frac{8x^2}{4} - \frac{36y^2}{4}$

$$4(2x^2 - 9y^2)$$

2.) Which equation represents the line that passes through the point $(-2, 5)$ and is perpendicular to $x - 6y = 4$?

↳ opp. recip. slopes

- A. $6x + y = -7$
- C. $x + 6y = 28$

- B. $6x - y = -17$
- D. $x - 6y = -32$

$$\begin{array}{r} x - 6y = 4 \\ -x \qquad \quad -x \\ \hline -6y = -x + 4 \\ \frac{-6y}{-6} = \frac{-x}{-6} + \frac{4}{-6} \\ y = \frac{1}{6}x - \frac{4}{6} \end{array}$$

$$\begin{array}{l} m = -6 \quad (-2, 5) \\ y = mx + b \\ 5 = 6(-2) + b \\ 5 = -12 + b \\ \frac{-12}{-12} \quad \frac{-12}{-12} \\ \hline b = -7 \end{array}$$

$$y = -6x - 7$$

$$\begin{array}{r} 6x + y = -7 \\ -6x \qquad -6x \\ \hline y = -6x - 7 \end{array}$$

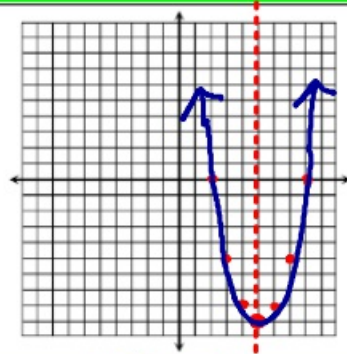
DELTA
MATH
RECAP

Graph the equation on the accompanying set of axes. You must plot 5 points including the roots and the vertex. Make a table of values.

$a=1$
 $b=-10$
 $c=16$

4. $y = x^2 - 10x + 16$
 $X = \frac{-b}{2a} = \frac{10}{2(1)}$
 $X = 5$

x	y
2	0
8	0
5	-9

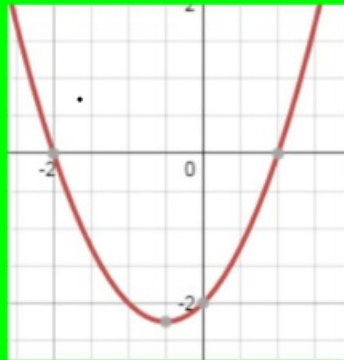


$y = (5)^2 - 10(5) + 16$
 $= 25 - 50 + 16$
 $y = -9$

(2, 0) and (8, 0)
2, 8

Ex. 4) What is the equation of the graph below?

$a = \text{positive } \ddot{\cup}$
vertex: $(-1, -2)$
sol. $\approx -2, 2$
y-int: $(0, -2)$



$X = \frac{1}{2(1)} = \frac{1}{2}$

A. $y = x^2 - 2x + 2$

B. $y = x^2 - x - 2$

C. $y = x^2 + x - 2$

D. $y = x^2 + x - 2$

Graphing v. Factoring

Graphing:

The equation needs to be in the form:

$$y = ax^2 + bx + c$$

Graph the equation and identify the roots, aka the x-intercepts, or the zeroes.

Factoring:

The equation needs to be in the form:

$$ax^2 + bx + c = 0$$

Factor completely and then set each factor equal to 0. Solve each equation for x.

Main Ideas/Questions	Notes/Examples
SOLVING QUADRATICS By Factoring	In many cases, we can find the solutions (or roots, zeros, x-intercepts) of a quadratic equation by factoring, rather than graphing. Follow the steps below to find the solutions of the given equation by factoring.
	1 Set the quadratic equation equal to 0. Given: $y = x^2 + 3x - 10$
	2 Factor the left side.
	3 Set each factor equal to 0 and solve each factor for x.
	4 Write your answer using curly braces.

Example: $y = x^2 + 3x - 10$

$$x^2 + 3x - 10 = 0$$

$$a=1 \quad b=3 \quad c=-10$$

$$(x-2)(x+5) = 0$$

$$\begin{array}{r} x-2=0 \\ +2 \quad +2 \\ \hline x=2 \end{array} \quad \begin{array}{r} x+5=0 \\ -5 \quad -5 \\ \hline x=-5 \end{array}$$

$$ac = -10$$

$$\begin{array}{r} 1 \quad -10 \\ -2 \quad +5 \\ \hline \end{array}$$

$(2,0)$ and $(-5,0)$

1. $x^2 + 4x + 3 = 0$

$$a=1 \quad b=4 \quad c=3$$

$$ac=3$$

$$\begin{array}{r} 1 \quad 3 \\ -1 \quad -3 \\ \hline \end{array}$$

$(-1,0)$
and $(-3,0)$

$$(x+1)(x+3) = 0$$

$$\begin{array}{r} x+1=0 \\ -1 \quad -1 \\ \hline x=-1 \end{array} \quad \begin{array}{r} x+3=0 \\ -3 \quad -3 \\ \hline x=-3 \end{array}$$

$$\begin{array}{r} -1 \quad -1 \\ -3 \quad -3 \\ \hline x=-1 \quad x=-3 \end{array}$$

2. $x^2 + 11x + 24 = 0$

$(-8,0)$ and $(-3,0)$

7. $x^2 + 10x + 25 = 0$

$$a=1 \quad b=10 \quad c=25$$

$$ac=25$$

$$\begin{array}{r} 1 \quad 25 \\ 5 \quad 5 \\ \hline \end{array}$$

$(-5,0)$

$$(x+5)(x+5) = 0$$

$$\begin{array}{r} x+5=0 \\ -5 \quad -5 \\ \hline x=-5 \end{array}$$

$$\begin{array}{r} -5 \quad -5 \\ \hline x=-5 \end{array}$$

$$x = -5$$

8. $x^2 - 8x + 16 = 0$

$$9. \frac{x^2 - 8x}{x} = 0$$

$$x(x-8) = 0$$

$$(0,0) \text{ and } (8,0)$$

$$\begin{array}{r} x=0 \\ x-8=0 \\ \quad +8 \quad +8 \\ \hline x=8 \end{array}$$

$$10. \frac{3x^2 + 15x}{3x} = 0$$

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

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

$$\begin{array}{r} 3x=0 \\ \frac{3}{3} \quad \frac{3}{3} \\ x=0 \end{array} \quad \begin{array}{r} x+5=0 \\ \quad -5 \quad -5 \\ \hline x=-5 \end{array}$$

$$(0,0) \text{ and } (-5,0)$$

$$13. x^2 - 64 = 0$$

$$(x+8)(x-8) = 0$$

$$x+8=0 \quad x-8=0$$

$$\begin{array}{r} -8 \quad -8 \\ \hline x=-8 \end{array} \quad \begin{array}{r} +8 \quad +8 \\ \hline x=8 \end{array}$$

$$x=-8 \quad x=8$$

$$(-8,0) \text{ and } (8,0)$$

$$14. x^2 - 25 = 0$$

$$\textcircled{\#15} \quad 4x^2 - 81 = 0$$

$$(2x+9)(2x-9) = 0$$

$$2x+9=0 \quad 2x-9=0$$

$$\begin{array}{r} -9 \quad -9 \\ \hline 2x = -9 \end{array} \quad \begin{array}{r} +9 \quad +9 \\ \hline 2x = 9 \end{array}$$

$$\frac{2x = -9}{2} \quad \frac{2x = 9}{2}$$

$$x = -\frac{9}{2} \quad x = \frac{9}{2}$$