

9.4 Finding Zeros (Roots)

Algebra 1

Name: Solutions

Practice

For each quadratic function, find the y- and x-intercepts. Then do a rough sketch of the graph.

1. $y = x^2 - 2x - 3$

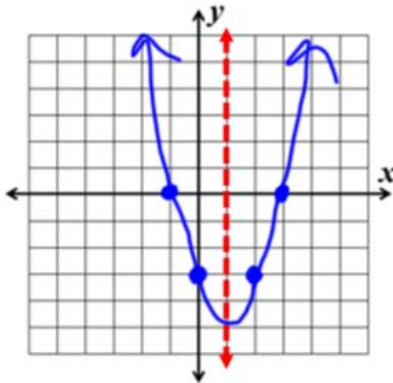
y-intercept:

$y = -3$

x-intercepts:

$0 = x^2 - 2x - 3$
 $0 = (x-3)(x+1)$

$x = 3$ $x = -1$



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

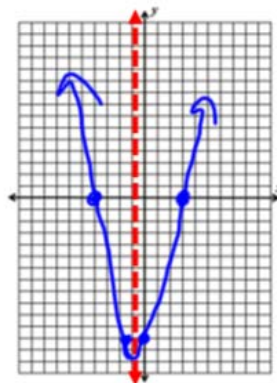
y-intercept:

$y = -12$

x-intercepts:

$0 = x^2 + x - 12$
 $0 = (x+4)(x-3)$

$x = -4$ $x = 3$



3. $y = -x^2 - 2x + 15$

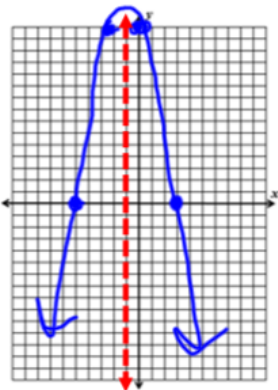
y-intercept:

$y = 15$

x-intercepts:

$0 = -(x^2 + 2x - 15)$
 $0 = -(x+5)(x-3)$

$x = -5$ $x = 3$



4. $y = -x^2 - 9x - 20$

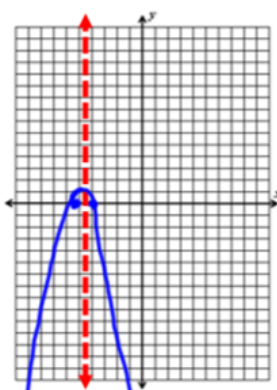
y-intercept:

$y = -20$

x-intercepts:

$0 = -(x^2 + 9x + 20)$
 $0 = -(x+4)(x+5)$

$x = -4$ $x = -5$



[graph is partially off the grid...that's ok.]

5. $y = 5x^2 - 23x - 10$

y-intercept:

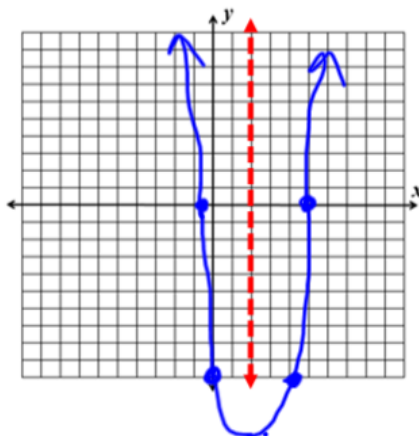
$y = -10$

x-intercepts:

$0 = 5x^2 - 23x - 10$
 $0 = (5x+2)(x-5)$

$5x+2=0$
 $5x=-2$
 $x=-\frac{2}{5}$

$x-5=0$
 $x=5$



6. $y = -x^2 - 7x - 6$

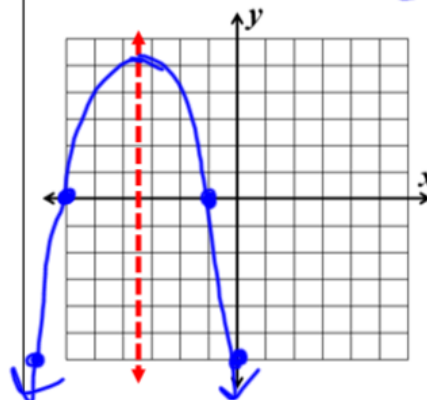
y-intercept:

$y = -6$

x-intercepts:

$0 = -(x^2 + 7x + 6)$
 $0 = -(x+6)(x+1)$

$x = -6$ $x = -1$



7. $y = x^2 + 4x - 5$

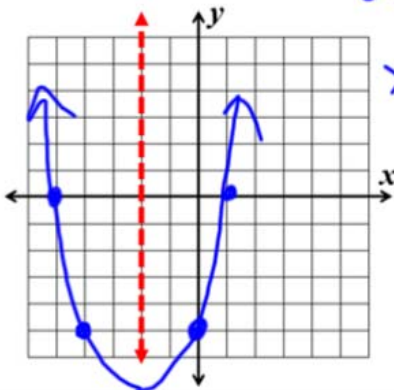
y-intercept:

$y = -5$

x-intercepts:

$0 = x^2 + 4x - 5$
 $0 = (x+5)(x-1)$

$x = -5$ $x = 1$



8. $y = -3x^2 - 11x - 10$

y-intercept:

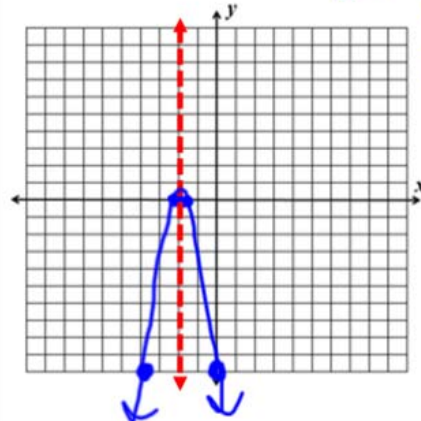
$y = -10$

x-intercepts:

$0 = -(3x^2 + 11x + 10)$
 $0 = -(3x+5)(x+2)$

$3x+5=0$
 $3x=-5$
 $x = -\frac{5}{3}$

$x+2=0$
 $x=-2$



9. $y = x^2 - 6x + 5$

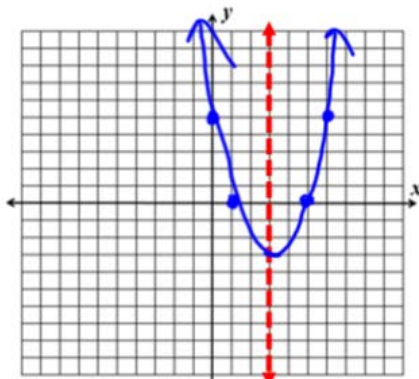
y-intercept:

$y = 5$

x-intercepts:

$0 = x^2 - 6x + 5$
 $0 = (x-5)(x-1)$

$x = 5$
 $x = 1$



10. $y = 2x^2 + 11x + 12$

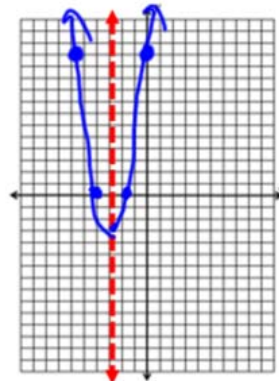
y-intercept:

$y = 12$

x-intercepts:

$0 = 2x^2 + 11x + 12$
 $0 = (2x+3)(x+4)$

$2x+3=0$
 $x = -\frac{3}{2}$ $x = -4$



11. $y = 2x^2 - 3x - 5$

y-intercept:

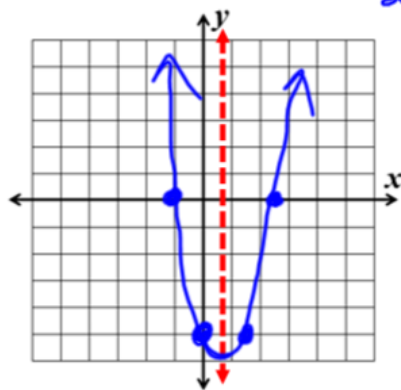
$y = -5$

x-intercepts:

$0 = (2x-5)(x+1)$
 $2x-5=0$

$2x=5$
 $x = \frac{5}{2}$

$x+1=0$
 $x=-1$



12. $y = x^2 - x - 6$

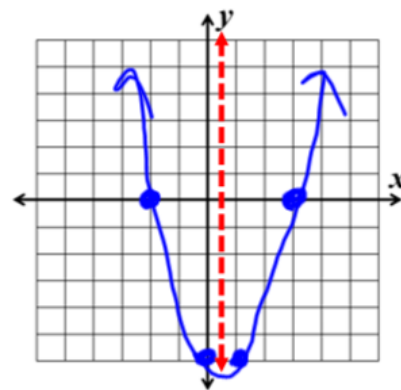
y-intercept:

$y = -6$

x-intercepts:

$0 = x^2 - x - 6$
 $0 = (x-3)(x+2)$

$x = 3$ $x = -2$



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

y-intercept:

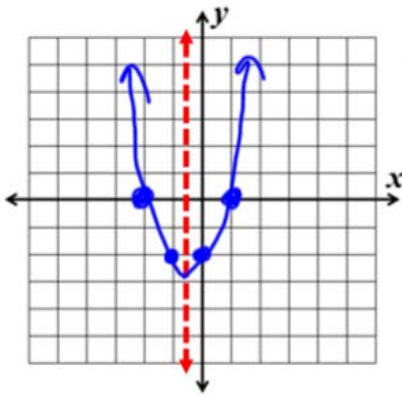
$$y = -2$$

x-intercepts:

$$0 = (x+2)(x-1)$$

$$x = -2$$

$$x = 1$$



14. $y = -x^2 - 3x + 4$

y-intercept:

$$y = 4$$

x-intercepts:

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

$$0 = -(x+4)(x-1)$$

$$x = -4$$

$$x = 1$$

