

Use any algebraic method to solve and graph the following quadratic equations.

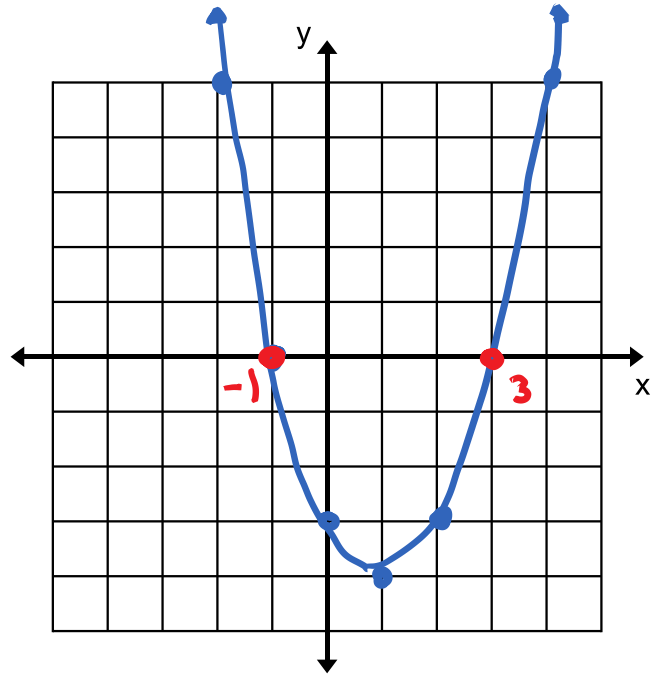
1.) $x^2 - 2x - 3 = 0$

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

$$x = 3 \quad x = -1$$

x-intercepts
zeros

real, rational, unequal

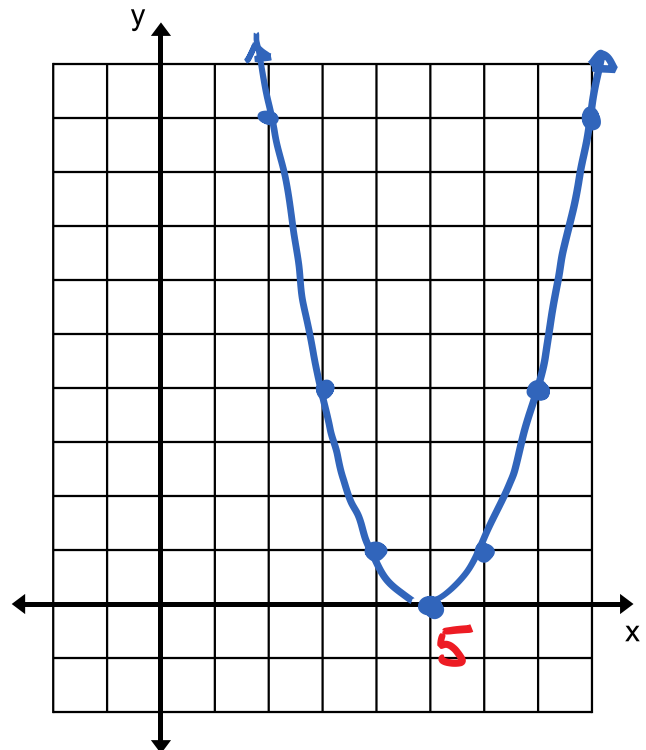


2.) $x^2 - 10x + 25 = 0$

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

$$x = 5 \quad x = 5$$

real, rational, equal



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

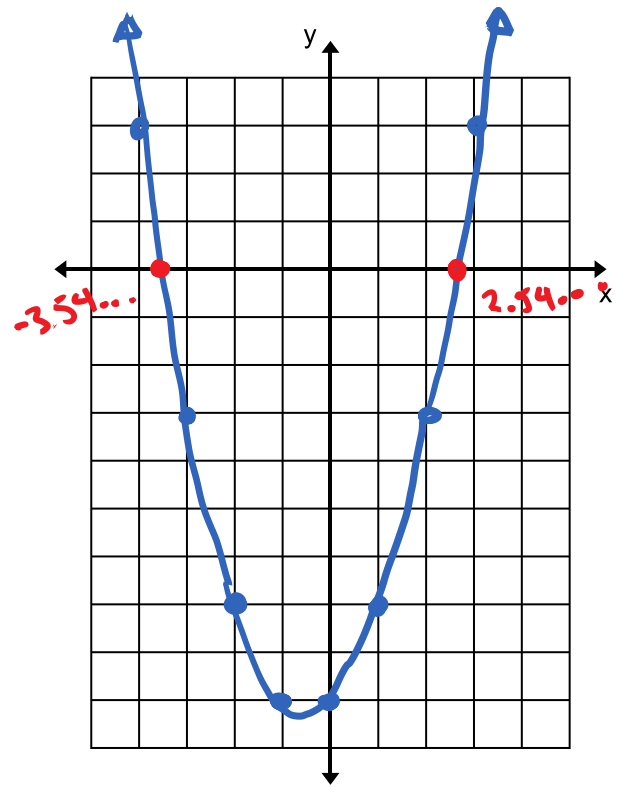
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-1 \pm \sqrt{1^2 - 4(1)(-9)}}{2(1)}$$

$$x = \frac{-1 \pm \sqrt{1 + 36}}{2} = \frac{-1 \pm \sqrt{37}}{2}$$

$$x = \frac{-1 + \sqrt{37}}{2} \approx 2.54 \dots$$

$$x = \frac{-1 - \sqrt{37}}{2} \approx -3.54 \dots$$

Real, irrational, unequal



$$4.) x^2 - 4x + 5 = 0$$

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

$$x^2 - 4x + \underline{4} = -5 + \underline{4}$$

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

$$\sqrt{(x-2)^2} = \sqrt{-1}$$

$$x-2 = \pm\sqrt{-1}$$

$$x = 2 \pm \sqrt{-1}$$

$$x = 2 \pm i$$

Imaginary

