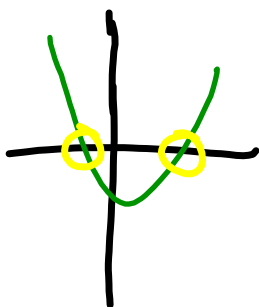


Solving Quadratics

$$3x + 7 = 10 \rightarrow$$

$$\frac{3x}{3} = \frac{3}{3}$$

$$x = 1$$



$$\begin{aligned} & \cancel{x^2} \\ & 3x^2 + 2x - 3 = 9 \\ & y = 2(x-3)^2 + 1 \end{aligned}$$

By Completing the Square:

$$Q = 3x^2 - 18x + 5$$

$$= 3(x^2 - 6x) + 5$$

$$= 3(x^2 - 6x + 9 - 9) + 5$$

$$= 3[(x-3)^2 - 9] + 5$$

$$= 3(x-3)^2 - 27 + 5$$

$$= 3(x-3)^2 - 22$$

Solve:

$$0 = 3(x-3)^2 - 22$$

$$\frac{22}{3} = \frac{3(x-3)^2}{3}$$

$$\sqrt{\frac{22}{3}} = \sqrt{(x-3)^2}$$

$$\pm \sqrt{\frac{22}{3}} = x - 3$$

$$3 \pm \sqrt{\frac{22}{3}} = x$$

$$= 3 + \sqrt{\frac{22}{3}}^{2.7}$$

$$= 5.7$$

$$= 3 - \sqrt{\frac{22}{3}}^{2.7}$$

$$= -0.3$$

Steps

1. Common Factor the "a" value from x^2 and x terms.
2. Create a perfect square trinomial inside the brackets. by + and - a #
3. Factor inside the brackets.
4. Multiply the "a" back in
5. Simplify.

factor $x^2 + 2x + 1$
 $= (x+1)(x+1)$
 $= (x+1)^2$

M: 1
A: 2
N: 1, 1

$$x^2 + \underline{10}x + \underline{25}$$

$$(x + \underline{5})(x + \underline{5})$$

M: 25

A: 10

N: 5, 5

By Quadratic Formula:

$$y = 3x^2 - 5x - 7$$

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

$$x = \frac{-(-5) \pm \sqrt{(-5)^2 - 4(3)(-7)}}{2(3)}$$

$$ax^2 + bx + c$$

$$x = \frac{5 \pm \sqrt{25 + 84}}{6}$$

$$x = \frac{5 \pm \sqrt{109}}{6} = 10.4$$

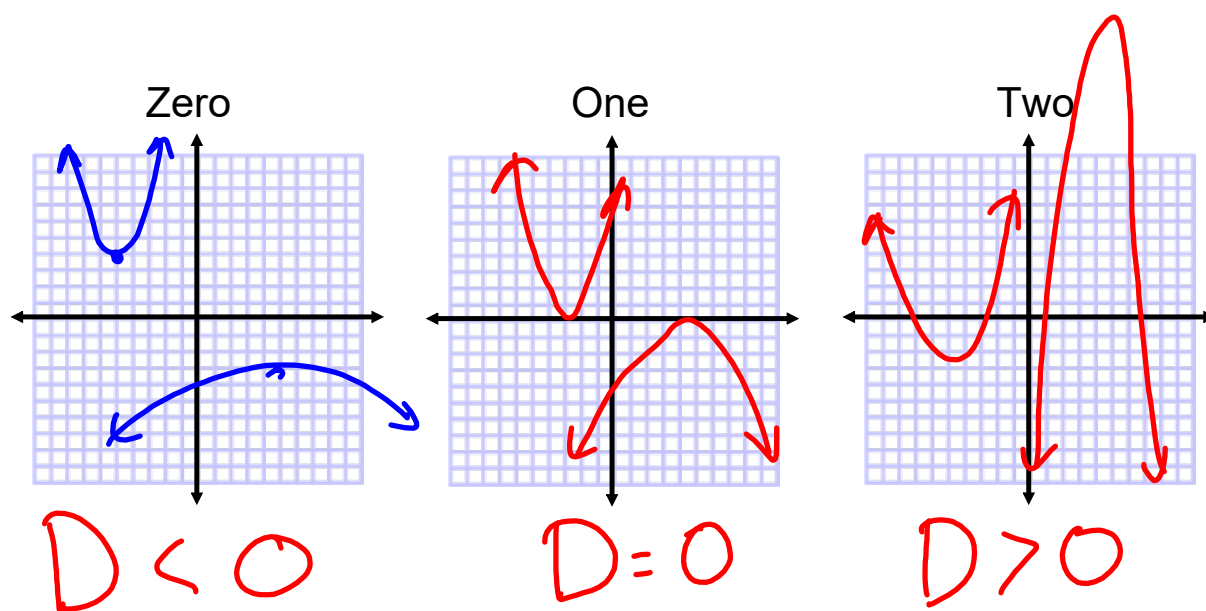
$$x = \frac{5 + 10.4}{6}$$

$$x = 2.5667$$

$$x = \frac{5 - 10.4}{6}$$

$$x = -0.9$$

Number of Zeros



The Discriminant

$$D = b^2 - 4ac$$

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

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1, 3, 6, 7, 11, 15