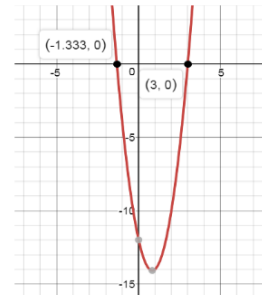


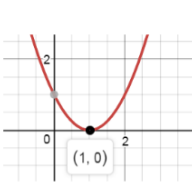
$$3x^2 - 5x - 12 = 0$$

3. $x = 3$ $x = -4/3$ ✓

2 solutions
2 x-intercepts
zeros.



1. $x^2 - 2x + 1 = 0$



$$\begin{array}{r} 1 \\ -1 \\ \hline -2 \end{array}$$

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

$$x-1=0$$

$$x=1 \quad x=1$$

$$(x-1)^2$$

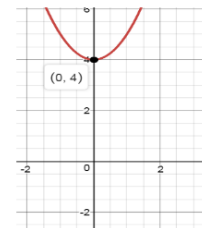
2 solutions.
1 x-intercept
(2 solutions are the same)

13. $x^2 + 4$

$a=1$
 $b=0$
 $c=4$

Graph of $x^2 + 4$ showing y-intercept at (0, 4).

No x-int
2 imag.
No sol



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

No real sol $= \pm \frac{4i}{2} = \pm 2i$

2nd method • Solve by taking $\sqrt{\quad}$

$$x^2 + 4 = 0$$

$$-4 -4$$

$$\sqrt{x^2} = \pm \sqrt{-4}$$

$$x = \pm 2i$$

imaginary
always

come in pairs.

16. $y^2 - 25 = 0$

$A = 1$

$B = 0$

$C = -25$

$$\frac{0 \pm \sqrt{0 - 4(1)(-25)}}{2}$$

$$\frac{0 \pm \sqrt{100}}{0 \pm \sqrt{25}} = \frac{\pm 10}{2} = \pm 5$$

$$y^2 - 25 = 0$$

$$y^2 = 25$$

$$y = \pm 5$$

$$\begin{array}{r} -25 \\ 5 \times -5 \\ \hline 0 \end{array} \quad (x+5)(x-5)$$

$$x = \pm 5$$

14. $\frac{1 \pm \sqrt{1 - 4(1)(1)}}{2} = \frac{1 \pm \sqrt{03}}{2}$

$$= \frac{1 \pm \sqrt{3}i}{2}$$

8. $x^2 + 3x = 0$

$x(x+3)$

$x = 0 \quad x = -3$

$$\begin{array}{r} 0 \\ 3 \times 0 \\ \hline 3 \end{array} \quad \begin{array}{l} a = 1 \\ b = 3 \\ c = 0 \end{array}$$

$$x^2 + 3x - 28 = 0$$

$$\begin{array}{r} -28 \\ 7 \overline{) -4} \\ \underline{-3} \end{array} \quad (x+7)(x-4)$$

$$\begin{array}{r} x+7=0 \\ -7 \\ \hline x=-7 \end{array} \quad \begin{array}{r} x-4=0 \\ +4 \\ \hline x=4 \end{array}$$

$$7. 4x^2 - 12x = 16$$

$$4x^2 - 12x - 16 = 0$$

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

$$\begin{array}{r} +1 \\ -4 \end{array}$$

$$\begin{array}{r} -4 \\ +1 \overline{) -4} \\ \underline{-3} \end{array}$$

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

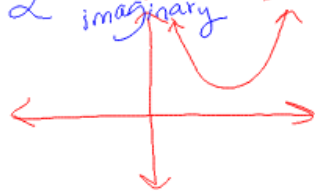
$$x = -1 \quad x = 4$$

Zero Product theorem

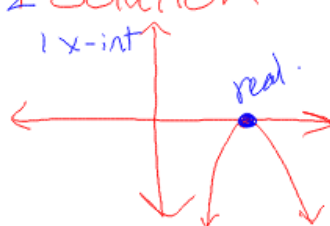
$$4 \neq 0$$

2 solutions.

0 x-intercepts.
2 Solutions
imaginary



2 Solution
1 x-int
real



real
2 solutions.
2 x-int