How to find the zeroes of the polynomials?

$p(x) = 2x + 3$

$2x + 3 = 0$

$2x = -3$

$x = \frac{-3}{2}$

$\frac{-3}{2}$ is a zero of $p(x)$

verify:

$2\left(\frac{-3}{2}\right) + 3$

$= -3 + 3$

$= 0$

Verified ✓

Step: 1

Equate $p(x)$ with 0.

i.e., $p(x) = 0$

Step: 2

Solve $p(x) = 0$ and find x.

Step: 3

x is a zero of the $p(x)$.

Result:

Any linear polynomial will be of the form

$p(x) = ax + b$ where $a \neq 0$.

$x = \frac{-b}{a}$ is the zero of the polynomial $p(x)$.

WKT, $ax + b = 0$

$\Rightarrow ax = -b$

$\Rightarrow x = \frac{-b}{a}$

What about Quadratic polynomial?

$p(x) = ax^2 + bx + c$ where $a \neq 0$.

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ are the zeroes of $p(x)$.

Proof:

$ax^2 + bx + c = 0$

$\vdots$

$x =$

$\frac{-b + \sqrt{b^2 - 4ac}}{2a}$, $\frac{-b - \sqrt{b^2 - 4ac}}{2a}$

if $b^2 - 4ac < 0 \Rightarrow$ no zeroes.