

Aug 29

Discriminant

- only applies to quadratic equations
(highest variable is x^2)

- Formula: $b^2 - 4ac$

- tells you what type of solutions you will get

$b^2 - 4ac$ is...	# of solutions	kind of solutions
positive	2	real
negative	2	imaginary
zero	1	real

Determine the discriminant and type of solutions:

(Ex 1) $5x^2 - 8x + 10 = 0$
a: 5 b: -8 c: 10

$b^2 - 4ac$ discriminant type
↓ ↓ ↓
 $(-8)^2 - 4(5)(10) = \boxed{-136}$ $\boxed{2 \text{ imaginary solutions}}$

$$\text{Ex 2) } m^2 + 5m = -3$$

$$+3 \quad +3$$

$$m^2 + 5m + 3 = 0$$

$$a:1 \quad b:5 \quad c:3$$

$$b^2 - 4ac$$

$$(5)^2 - 4(1)(3) = \boxed{13}$$

$\boxed{2 \text{ real solutions}}$

$$\text{Ex 3) } 4y^2 + 2y + 16 = 18y$$

$$-18y \quad -18y$$

$$4y^2 - 16y + 16 = 0$$

$$a:4 \quad b:-16 \quad c:16$$

$$b^2 - 4ac$$

$$(-16)^2 - 4(4)(16) = \boxed{0}$$

$\boxed{1 \text{ real solution}}$