

Lesson 93: The Discriminant

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

$$b^2 - 4ac = \begin{cases} 0 & \Rightarrow \text{One Real Solution} \\ \text{Pos} & \Rightarrow \text{Two Real Solutions} \\ \text{Neg} & \Rightarrow \text{Two Complex Solutions} \end{cases}$$

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

$$= \underline{R \pm R}$$

$$R \pm I$$

$$R \pm Ii$$

Practice A: $x^2 = -3x + 2$
 $x^2 + 3x - 2 = 0$

$$b^2 - 4ac$$
$$9 - 4(1)(-2)$$

$$9 + 8$$
$$\text{17}$$

\Rightarrow Two Real Solutions

Practice B: $-4x = -3x^2 - 3$

$$3x^2 - 4x + 3$$

$$b^2 - 4ac$$
$$(-4)^2 - 4(3)(3)$$

$$16 - 36$$
$$\text{-20}$$

\Rightarrow Two Complex Solutions