Solve: $x^2 + 2x + 3 = 0$

$a = 1$

$b = 2$

$c = 3$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-(2) \pm \sqrt{(2)^2 - 4(1)(3)}}{2(1)}$$

$$= \frac{-2 \pm \sqrt{4 - 12}}{2}$$

$$\sqrt{-8} = i\sqrt{8}$$

$$= i\sqrt{4 \cdot 2}$$

$$= 2i\sqrt{2}$$

$$= \frac{-2 \pm \sqrt{-8}}{2} = \frac{-2 \pm 2i\sqrt{2}}{2}$$

$$x = -1 \pm i\sqrt{2}$$

Solve:

Ex: $\frac{x+5}{x^2+x} = \frac{1}{x^2+x} - \frac{x-6}{x+1}$

$$\frac{x+5}{\cancel{x(x+1)}} = \frac{1}{\cancel{x(x+1)}} - \frac{x(x-6)}{\cancel{x(x+1)}}$$

$$x + 5 = 1 - \cancel{x^2} + 6x$$

$$+x^2 \qquad +\cancel{x^2}$$

$$x^2 + x + 5 = 1 + \cancel{6x}$$

$$-6x \quad -1 \qquad -1 \quad -\cancel{6x}$$

$$x^2 - 5x + 4 = 0$$

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

$$x - 1 = 0 \qquad x - \cancel{4} = 0$$

$$+1 \quad +1 \qquad +\cancel{4} \quad +4$$

$$\boxed{x = 1 \qquad x = 4}$$