

Solve by Quadratic Formula

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

$$\frac{-2 \pm \sqrt{(2)^2 - 4(1)(2)}}{2(1)} = \frac{-2 \pm \sqrt{-4}}{2}$$

$$\frac{-2 \pm 2i}{2} = -1 \pm i$$

$$x = -1 \pm i$$

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

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

$$\frac{3 \pm 1}{2} = \begin{cases} \frac{3+1}{2} = \frac{4}{2} = 2 \\ \frac{3-1}{2} = \frac{2}{2} = 1 \end{cases}$$

$$x = 2$$

$$x = 1$$

3.  $5x^2 - 10x + 6 = 0$

$$\frac{10 \pm \sqrt{(-10)^2 - 4(5)(6)}}{2(5)} = \frac{10 \pm \sqrt{+20}}{10}$$

$$\frac{10 \pm 2i\sqrt{5}}{10} = \frac{5 \pm i\sqrt{5}}{5}$$

$$x = \frac{5 \pm i\sqrt{5}}{5}$$

$\sqrt{20}$   
4 5  
2 2  
2 5

4.  $2x^2 + 6x + 3 = 0$

$$\frac{-6 \pm \sqrt{(6)^2 - 4(2)(3)}}{2(2)} = \frac{-6 \pm \sqrt{32}}{4}$$

$$\frac{-6 \pm 2\sqrt{8}}{4} = \frac{-3 \pm \sqrt{8}}{2}$$

$$x = \frac{-3 \pm \sqrt{8}}{2}$$

$\sqrt{32}$   
4 8  
2 2  
2 3

5.  $x + 1 = 2x^2$   
 ~~$-2x - 1$~~   ~~$-2x - 1$~~

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

$$\frac{2 \pm \sqrt{(-2)^2 - 4(2)(-1)}}{2(2)} = \frac{2 \pm \sqrt{12}}{4}$$

$$\frac{2 \pm 2\sqrt{3}}{4}$$

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

$\sqrt{12}$   
4 3  
2 2  
2 3

6.  $2x^2 + x = 10$   
 ~~$-10$~~   ~~$-10$~~

$$2x^2 + x - 10 = 0$$

$$\frac{-1 \pm \sqrt{(1)^2 - 4(2)(-10)}}{2(2)} = \frac{-1 \pm \sqrt{81}}{4}$$

$$\frac{-1 \pm 9}{4} = \begin{cases} \frac{-1+9}{4} = \frac{8}{4} = 2 \\ \frac{-1-9}{4} = \frac{-10}{4} = \frac{-5}{2} \end{cases}$$

$$x = 2 \quad x = \frac{-5}{2}$$