Absolute Value Homework Solutions:

Solve the following equations:

$|2x-3| = 4-x$

$|x^2+2x| = 15$ (For this problem, find all the real value solutions)

$|x^2+4| = 1$ (For this problem, find all solutions)

Answer key:

$$2x-3 = -(4-x) = x-4 \quad \text{or} \quad 2x-3 = 4-x$$

$$\begin{array}{lll} 2x-3 = x-4 & \text{or} & 2x-3 = 4-x \\ x = -1 & \text{or} & 3x = 7 \\ x = -1 & \text{or} & x = \dfrac{7}{3} \end{array}$$

$$x^2+2x = -15 \quad \text{or} \quad x^2+2x = 15$$

$$\begin{array}{l} x^2+2x-15 = 0 \\ (x+5)(x-3) = 0 \quad \rightarrow \quad x = -5, \;\; x = 3 \end{array}$$

$$\begin{array}{l} x^2+4 = -1 \quad \rightarrow \quad x^2 = -5 \quad \rightarrow \quad x = \pm\sqrt{5}\,i \\ x^2+4 = 1 \quad \rightarrow \quad x^2 = -3 \quad \rightarrow \quad x = \pm\sqrt{3}\,i \end{array}$$