Solve:

1a) $(x-3)^2 = 7$

$\sqrt{(x-3)^2} = \sqrt{7}$

$|x-3| = \sqrt{7}$

$+$ $x - 3 = \sqrt{7}$

$+3 \quad +3$

$x = 3 + \sqrt{7}$

$\boxed{-}$ $-(x-3) = \sqrt{7}$

$-x + 3 = \sqrt{7}$

$-3 \quad -3$

$-1 \cdot -x = (-3 + \sqrt{7}) \cdot -1$

$x = 3 - \sqrt{7}$

$x = 3 \pm \sqrt{7}$

1b) $(2x-3)^2 = 7$

$\sqrt{(2x-3)^2} = \sqrt{7}$

$|2x-3| = \sqrt{7}$

$2x - 3 = \pm\sqrt{7}$

$+3 \quad +3$

$\frac{2x}{2} = \frac{3 \pm \sqrt{7}}{2}$

$x = \frac{3 \pm \sqrt{7}}{2}$

1c) $\sqrt{(x+5)^2} = \sqrt{-4}$

$|x+5| = 2i$

$x+5 = \pm 2i$

$\quad -5 \quad\quad -5$

$\boxed{x = -5 \pm 2i}$

Ex 2 Solve:

$x^2 - 6x - 3 = 0$

$\quad\quad\quad +3 \quad +3$

$x^2 - 6x + 9 = 3 + 9$

$\sqrt{(x-3)^2} = \sqrt{12}$

$|x-3| = 2\sqrt{3}$

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

$\quad +3 \quad\quad +3$

$\boxed{x = 3 \pm 2\sqrt{3}}$

Solving $ax^2+bx+c=0$ by Completing The Square.

1) Move the constant "c" to the right side of the equation (by itself)
2) If "a", the quadratic coefficient isn't 1, then divide each term by "a"
3) Add to both sides of the equation "b" divided by "2a" quantity squared
4) Factor the left side of the equation as a Perfect Square Trinomial.
5) Take the square root of both sides of the equation and simplify.

Ex3 Solve:

$$2y^2+2y+5=0$$
$$\quad\quad\quad -5 \quad -5$$

$$\frac{2y^2}{2}+\frac{2y}{2} = \frac{-5}{2}$$

"Texas 2 Step"

$$\left(\frac{1}{2}\right)^2$$

$$y^2+1y+\frac{1}{4} = \frac{-5}{2}+\frac{1}{4}$$

want a perfect square trinomial

$$\sqrt{\left(y+\frac{1}{2}\right)^2} = \sqrt{-\frac{9}{4}}$$

$$\left|y+\frac{1}{2}\right| = \frac{3i}{2}$$

$$y+\frac{1}{2} = \pm\frac{3i}{2}$$

$-\frac{1}{2}$ $-\frac{1}{2}$

$$y = -\frac{1}{2} \pm \frac{3}{2} i$$