① Solve by Factoring

Ⓐ $4x^2 - 81 = 0$

$(2x+9)(2x-9) = 0$

$\boxed{4.5 \text{ and } -4.5}$

Ⓑ $3x^2 + 22x = -7$

$3x^2 + 22x + 7 = 0$

$(x+7)(3x+1) = 0$

$\boxed{x = -7 \quad x = -\frac{1}{3}}$

② Change each **function** into

intercept form by factoring

ⓐ $y = 3x^2 - 4x + 1$

$y = (3x - 1)(x - 1)$

$1 +$
$\frac{1}{3}$

ⓑ $y = x^2 - 9x + 20$

$y = (x - 4)(x - 5)$

③ Solve by taking the Square Root of Both Sides

ⓐ $(x+3)^2 + 1 = 82$

$\sqrt{(x+3)^2} = \sqrt{81}$

$x + 3 = \pm 9$

$x = -3 \pm 9$

$\boxed{x = 6, -12}$

ⓑ $2(x-2)^2 = 50$

$(x-2)^2 = 25$

$x - 2 = \pm 5$

2 ± 5

$\boxed{7 \text{ or } -3}$

(4) Complete the Square
to solve when $a=1$

$\left(\dfrac{12}{2}\right)^2$

(a) $x^2 = -12x - 32$

$x^2 + 12x + 36 = -32 + 36$

$\sqrt{(x+6)^2} = \sqrt{4}$

$x + 6 = \pm 2$

$x = -6 \pm 2$

$x = -8$

$x = -4$

⑤ Complete the Square to Solve
when $a \neq 1$

You cannot use $\left(\frac{1}{2}\right)^2$ when $a \neq 1$!

$$4x^2 + 20x + \boxed{25}$$

$$(2x+5)^2$$

$$(2x+5)(2x+5)$$

$$9x^2 - 12x + \boxed{4}$$

$$(3x - 2)^2$$

$$3x^2 - 12x + 6 = 0$$

$$\frac{3x^2 - 12x = -6}{3}$$

$$x^2 - 4x + \boxed{4} = -2 + \boxed{4}$$

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

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

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

$$4x^2 - 8x - 32 = 0$$

$$x^2 - 2x - 8 = 0$$

$$x^2 - 2x + \boxed{1} = 8 + \boxed{1}$$

$$(x-1)^2 = 9$$

$$x - 1 = \pm 3$$

$$x = 1 \pm 3$$

$$4 \text{ or } -2$$

⑥ Complete the square to put into Vertex form. Then find the vertex.

@ $y = x^2 + 12x + 32$

$y = \boxed{x^2 + 12x + \boxed{36}} + 32 \boxed{-36}$

$y = (x+6)^2 - 4$

6) Complete the square to put into Vertex form. Then find the vertex.

b) $y = x^2 + 8x + 12$

$y = x^2 + 8x + \boxed{16} + 12 \boxed{-16}$

$y = (x+4)^2 - 4$

$V(-4, -4)$

⑤ Complete the square to put into Vertex form. Then find the vertex.

© $y = 2x^2 + 12x - 4$

$y = 2(x^2 + 6x + \boxed{9}) - 4 + \boxed{-18}$

$y = 2(x+3)^2 - 22$

⑤ Complete the square to put into Vertex form. Then find the vertex.

ⓐ $y = 3x^2 + 18x - 1$

$y = 3\left[x^2 + 6x + \boxed{9}\right] - 1 + \boxed{-27}$

$y = 3(x+3)^2 - 28$

⑤ Complete the square to put
into vertex form.
Then find the vertex.

ⓔ $y = -2x^2 + 8x - 8$