

$$\textcircled{3} \quad y = -x^2 - 14x - 59$$

$$a = -1$$

$$b = -14$$

$$c = -59$$

A of S

$$x = \frac{-b}{2a}$$

$$x = \frac{14}{2(-1)} \quad \boxed{x = -7}$$

$$f(x) = a(x-h)^2 + k$$

$$a = -1$$

$$h = -7$$

$$k = -10$$

$$y = f\left(\frac{-b}{2a}\right) \quad f(-7)$$

$$y = -1 \cdot (-7)^2 - 14(-7) - 59$$

$$y = -1(49) + 98 - 59$$

$$y = -49 + 98 - 59$$

$$\boxed{y = -10}$$

$$\boxed{f(x) = -(x+7)^2 - 10}$$

	x	7
x	x^2	$7x$
7	$7x$	49

$$f(x) = -(x^2 + 14x + 49) - 10$$

$$f(x) = -x^2 - 14x - 49 - 10$$

$$\boxed{f(x) = -x^2 - 14x - 59}$$

④ $y = 2x^2 + 36x + 170$
 $a = 2$ $b = 36$ $c = 170$

A of S

$$x = -\frac{b}{2a}$$

$$x = \frac{-36}{2(2)}$$

$$x = \frac{-36}{4}$$

$$x = -9$$

$$f(x) = a(x-h)^2 + k$$

$$a = 2$$

$$h = -9$$

$$k = 8$$

$$f\left(\frac{-b}{2a}\right) \quad f(-9)$$

$$y = 2(-9)^2 + 36(-9) + 170$$

$$y = 8$$

$$f(x) = 2(x+9)^2 + 8$$

	x	9
x	x^2	$9x$
9	$9x$	81

$$f(x) = 2(x^2 + 18x + 81) + 8$$

$$f(x) = 2x^2 + 36x + 162 + 8$$

$$f(x) = 2x^2 + 36x + 170$$