tip: $a(x - p)^2 + q$
$\quad = a(x^2 - 2px + p^2) + q$
$\quad = ax^2 - 2apx + ap^2 + q$

(1) $(x - 3)^2 + 4$
$\quad = x^2 - 6x + 13$

(2) $-(x - 10)^2 - 5$
$\quad = -(x^2 - 20x + 100) - 5$
$\quad = -x^2 + 20x - 105$

(3) $-2(x - 10)^2 + 4$
$\quad = -2(x^2 - 20x + 100) + 4$
$\quad = -2x^2 + 40x - 196$

(4) $2(x - 5)^2 + 4$
$\quad = 2(x^2 - 10x + 25) + 4$
$\quad = 2x^2 - 20x + 54$

(5) $3(x + 9)^2 + 2$
$\quad = 3(x^2 + 18x + 81) + 2$
$\quad = 3x^2 + 54x + 245$

(6) $-3(x + 7)^2 + 2$
$\quad = -3(x^2 + 14x + 49) + 2$
$\quad = -3x^2 - 42x - 145$

(7) $-2(x + 3)^2 - 1$
$\quad = -2(x^2 + 6x + 9) - 1$
$\quad = -2x^2 - 12x - 19$

(8) $4(x - 1)^2 - 5$
$\quad = 4(x^2 - 2x + 1) - 5$
$\quad = 4x^2 - 8x - 1$

(9) $-(x - 10)^2 - 5$
$\quad = -(x^2 - 20x + 100) - 5$
$\quad = -x^2 + 20x - 105$

(10) $-3(x - 7)^2 + 2$
$\quad = -3(x^2 - 14x + 49) + 2$
$\quad = -3x^2 + 42x - 145$

(11) $-3(x - 1)^2 + 4$
$\quad = -3(x^2 - 2x + 1) + 4$
$\quad = -3x^2 + 6x + 1$

(12) $4(x + 1)^2 - 5$
$\quad = 4(x^2 + 2x + 1) - 5$
$\quad = 4x^2 + 8x - 1$

(13) $-2(x - 8)^2 + 2$
$\quad = -2(x^2 - 16x + 64) + 2$
$\quad = -2x^2 + 32x - 126$

(14) $-2(x - 5)^2 - 2$
$\quad = -2(x^2 - 10x + 25) - 2$

$\quad = -2x^2 + 20x - 52$

(15) $3(x - 1)^2 - 3$
$\quad = 3(x^2 - 2x + 1) - 3$
$\quad = 3x^2 - 6x$

(16) $4(x - 6)^2 + 2$
$\quad = 4(x^2 - 12x + 36) + 2$
$\quad = 4x^2 - 48x + 146$

(17) $-4(x - 6)^2 - 3$
$\quad = -4(x^2 - 12x + 36) - 3$
$\quad = -4x^2 + 48x - 147$

(18) $(x - 8)^2 - 2$
$\quad = x^2 - 16x + 62$

(19) $(x - 2)^2 - 1$
$\quad = x^2 - 4x + 3$

(20) $-5(x - 1)^2 - 1$
$\quad = -5(x^2 - 2x + 1) - 1$
$\quad = -5x^2 + 10x - 6$

(21) $-4(x - 6)^2 - 1$
$\quad = -4(x^2 - 12x + 36) - 1$
$\quad = -4x^2 + 48x - 145$

(22) $-5(x - 1)^2 - 2$
$\quad = -5(x^2 - 2x + 1) - 2$
$\quad = -5x^2 + 10x - 7$

(23) $-5(x - 4)^2 - 4$
$\quad = -5(x^2 - 8x + 16) - 4$
$\quad = -5x^2 + 40x - 84$

(24) $3(x - 5)^2 - 2$
$\quad = 3(x^2 - 10x + 25) - 2$
$\quad = 3x^2 - 30x + 73$

(25) $4(x - 7)^2 - 5$
$\quad = 4(x^2 - 14x + 49) - 5$
$\quad = 4x^2 - 56x + 191$