standard form
(vertex form)

$$y = a(x-p)^2 + q$$

general form

$$y = ax^2 + bx + c$$

"a" same for both forms

$$y = -(x-2)^2 + 7 \qquad y = -x^2 + 4x + 3$$

same graph

change general to standard form
(COMPLETE THE SQUARE — ch3)

ex 1 $y = x^2 - 10x + 3$ $a = 1$

$y = x^2 - 10x + 25 - 25 + 3$ $\left(\frac{-10}{2}\right)^2$

TRI SQ
FACTOR

$$y = (x - 5)^2 - 22$$

2. $y = \dfrac{3}{3}x^2 - \dfrac{12}{3}x + 7$ $a = 3$

$y = 3(x^2 - 4x + 4 - 4) + 7$ $\left(\frac{-4}{2}\right)^2$

$y = 3(x - 2)^2 - 12 + 7$

$$y = 3(x-2)^2 - 5$$

3. $\quad y = \dfrac{1}{5}x^2 + 2x + 1$

$$y = \dfrac{1}{5}\left(x^2 + 10x + 25 - 25\right) + 1$$

$$y = \dfrac{1}{5}(x+5)^2 - 5 + 1$$

$$y = \dfrac{1}{5}(x+5)^2 - 4$$

$$a = \dfrac{1}{5}$$

$$2 \div \dfrac{1}{5} = 2 \times \dfrac{5}{1}$$

$$\left(\dfrac{10}{2}\right)^2$$

$$-25 \times \dfrac{1}{5} = -5$$

change standard to general

4. $\quad y = -(x-2)^2 + 7$

$$y = -(x-2)(x-2) + 7$$

$$y = -(x^2 - 2x - 2x + 4) + 7$$

$$y = -(x^2 - 4x + 4) + 7$$

$$y = -x^2 + 4x - 4 + 7$$

$$y = -x^2 + 4x + 3$$

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