Solve the following system of equations.

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

Solution(s): ☐

- Enter your answers as points: (x, y)
- Because these systems are non-linear, you may have more than one solution.
- If you have more than one solution, enter your answers as a list of points: $(x_0, y_0), (x_1, y_1)$
- Use 'sqrt(...)' to enter radical answers, do not use decimal approximations.

Hint:

Solution:

$$y - x = 4$$

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

$$x^2 - 4x + 4 + 6 - x = 4$$

$$x^2 - 4x - x + 4 + 6 - 4 = 0$$

$$x^2 - 5x + 6 = 0$$

$$(x-3)(x-2) = 0$$

$$x - 3 = 0 \qquad \text{or} \qquad x - 2 = 0$$
$$+3 \ +3 \qquad\qquad\qquad +2 \ +2$$
$$x = 3 \qquad\qquad\qquad\qquad x = 2$$

$$y - x = 4$$
$$\text{Let } x = 3$$
$$y - (3) = 4$$
$$+3 \ +3$$
$$y = 7$$

$$\text{Let } x = 2$$
$$y - (2) = 4$$
$$+2 \quad +2$$
$$y = 6$$

$$\text{Solutions } (x, y) \in \{(3, 7), (2, 6)\}$$