

(1 point) CUNY/CityTech/CollegeAlgebra_Trig/NonLinearSystems/line-parabola.pg
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:

$$y - x = 4$$

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

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

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

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

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

$$\begin{array}{r} x - 3 = 0 \\ + 3 \quad + 3 \\ \hline \end{array}$$

$$x = 3$$

$$\text{or } \begin{array}{r} x - 2 = 0 \\ + 2 \quad + 2 \\ \hline \end{array}$$

$$x = 2$$

$$y - x = 4$$

$$\text{Let } x = 3$$

$$\begin{array}{r} y - (3) = 4 \\ + 3 \quad + 3 \\ \hline \end{array}$$

$$y = 7$$

$$\text{Let } x = 2$$

$$\begin{array}{r} y - (2) = 4 \\ + 2 \quad + 2 \\ \hline \end{array}$$

$$y = 6$$

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