

Systems of Nonlinear Equations in Two Variables

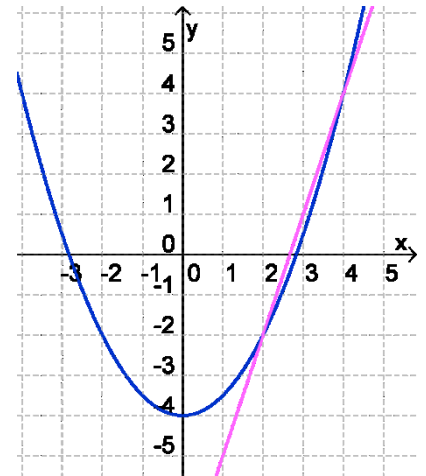
Substitution Method

Ex 1.

Where do the graphs of these two equations intersect?

$$y = \frac{1}{2}x^2 - 4$$

$$3x - y = 8$$



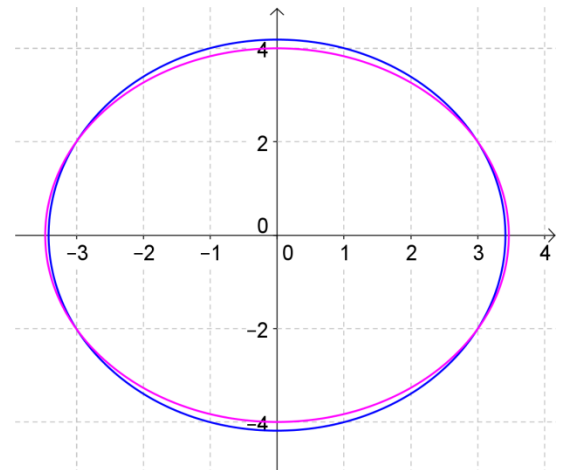
Addition Method

Ex 2.

Solve the system by the addition method:

$$3x^2 + 2y^2 = 35$$

$$4x^2 + 3y^2 = 48$$

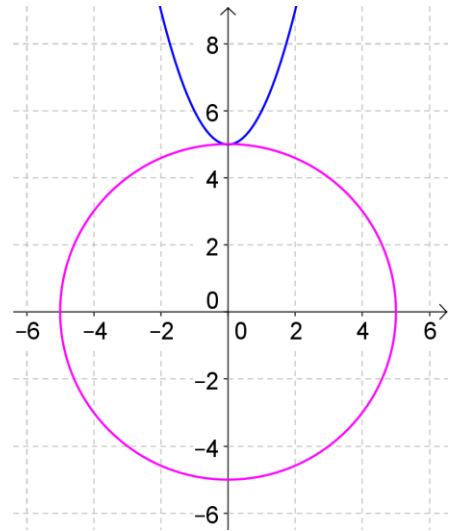


Ex 3.

Solve the system by the addition method:

$$y = x^2 + 5$$

$$x^2 + y^2 = 25$$

**Ex 4.**

Find the length and width of a rectangle whose perimeter is 20 feet and whose area is 21 square feet.

Practice

1. Solve the system by the substitution method.

$$x^2 + y^2 = 5$$

$$3x - y = 5$$

2. Solve the system by the addition method.

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

$$2x^2 - y^2 = -2$$

3. Find the length and width of a rectangle whose perimeter is 40 feet and whose area is 96 square feet.

Q: I have no feather, nor flesh, nor scales, nor bones. But I have fingers and thumbs of my own.
What am I?