

Quadratic Quadratic Systems

Procedure For Quadratic Quadratic Systems

1. Make one of the coefficients the same but opposite in sign by multiplying
2. Add the equations together
3. Solve the resulting equation
4. Substitute that value into the easiest equation to find other variable
5. Write your answer(s) as ordered pairs
6. Check your answers

Example

$$\begin{array}{l} 3x^2 + 4y^2 = 16 \\ x^2 - y^2 = 3 \end{array}$$

1. $3x^2 + 4y^2 = 16$
 $\Rightarrow (x4) \quad \underline{4x^2 - 4y^2 = 12}$
2. $7x^2 = 28$
3. $x^2 = 4$
 $x = \pm 2$
4. $x^2 - y^2 = 3$ $x^2 - y^2 = 3$
 $2^2 - y^2 = 3$ $(-2)^2 - y^2 = 3$
 $y^2 = 1$ $y^2 = 1$
 $y = \pm 1$ $y = \pm 1$
5. $\{(2, 1), (2, -1), (-2, 1), (-2, -1)\}$
6. The ordered pairs satisfy the eqns

Solve the following systems of equations.

1. $x^2 + 2y^2 = 17$
 $2x^2 - 3y^2 = 6$

2. $4x^2 + y^2 = 25$
 $x^2 - y^2 = -5$

$$\begin{aligned} 3. \quad & 4x^2 - y^2 = 0 \\ & x^2 + 2y^2 = 81 \end{aligned}$$

$$\begin{aligned} 4. \quad & x^2 + 4y^2 - 4 = 0 \\ & -2y^2 + x + 2 = 0 \end{aligned}$$

$$\begin{aligned} 5. \quad & x^2 + y^2 = 8 \\ & xy = 4 \end{aligned}$$

$$\begin{aligned} 6. \quad & y = x^2 + 2x - 3 \\ & y = 2x^2 - x - 1 \end{aligned}$$

$$\begin{aligned} 7. \quad & 4x^2 + y^2 = 25 \\ & x^2 - y^2 = -5 \end{aligned}$$

$$\begin{aligned} 8. \quad & x^2 + y^2 = 25 \\ & x^2 - y^2 = -7 \end{aligned}$$

$$\begin{aligned} 9. \quad & x^2 + y^2 = 8 \\ & xy = 4 \end{aligned}$$