

Intermediate Algebra Skill

Solving A System of One Linear Equation and One Quadratic Equation

Solve the following Non-linear Systems of Equations:

$$1) \begin{cases} x^2 + y^2 = 100 \\ y - x = 2 \end{cases}$$

$$2) \begin{cases} 9x^2 + 4y^2 = 36 \\ 3x + 2y = 6 \end{cases}$$

$$3) \begin{cases} y = x^2 \\ 3x = y + 2 \end{cases}$$

$$4) \begin{cases} y^2 - x^2 = 16 \\ 2x - y = 1 \end{cases}$$

$$5) \begin{cases} m^2 + 3n^2 = 10 \\ m - n = 2 \end{cases}$$

$$6) \begin{cases} 4x^2 + 9y^2 = 36 \\ x + 3y = 3 \end{cases}$$

$$7) \begin{cases} y = x^2 + 1 \\ y = 3x - 1 \end{cases}$$

$$8) \begin{cases} y = 2x + 4 \\ y = x^2 + x - 2 \end{cases}$$

$$9) \begin{cases} x = y - 5 \\ x = y^2 - 2y - 3 \end{cases}$$

$$10) \begin{cases} x = y^2 + 2y + 1 \\ x = -5 - 3y \end{cases}$$

$$11) \begin{cases} y = x^2 - 7x + 2 \\ 2x + y = 2 \end{cases}$$

$$12) \begin{cases} y = x^2 + 5x + 3 \\ y - 2x = 21 \end{cases}$$

$$13) \begin{cases} x = 2y^2 + 5y - 3 \\ x - 3y = 1 \end{cases}$$

$$14) \begin{cases} x = -2y^2 + 5y + 10 \\ 2y - x = -1 \end{cases}$$

Answers to Solving A System of One Linear Equation and One Quadratic Equation

1) $(-8, -6), (6, 8)$

2) $(2, 0), (0, 3)$

3) $(2, 4), (1, 1)$

4) $\left(-\frac{5}{3}, -\frac{13}{3}\right), (3, 5)$

5) $\left(\frac{3+\sqrt{7}}{2}, \frac{-1+\sqrt{7}}{2}\right), \left(\frac{3-\sqrt{7}}{2}, \frac{-1-\sqrt{7}}{2}\right)$

6) $(3, 0), \left(-\frac{9}{5}, \frac{8}{5}\right)$

7) $(1, 2), (2, 5)$

8) $(3, 10), (-2, 0)$

9) $(-3, 2), (-4, 1)$

10) $(1, -2), (4, 3)$

11) $(0, 2), (5, -8)$

12) $(-6, 9), (3, 27)$

13) $(-5, -2), (4, 1)$

14) $\left(-2, -\frac{3}{2}\right), (7, 3)$