

Intermediate Algebra Skill
Solving A Quadratic System

Solve the following Quadratic systems of equations:

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

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

$$3) \begin{cases} x^2 + y^2 = 4 \\ 16x^2 + 9y^2 = 144 \end{cases}$$

$$4) \begin{cases} x^2 + y^2 = 16 \\ y^2 - 2x^2 = 10 \end{cases}$$

$$5) \begin{cases} x^2 - y = 5 \\ x^2 + y^2 = 25 \end{cases}$$

$$6) \begin{cases} x^2 + y^2 = 4 \\ 2x^2 - y^2 = 8 \end{cases}$$

$$7) \begin{cases} x^2 + y^2 = 16 \\ 4x^2 + y^2 = 16 \end{cases}$$

$$8) \begin{cases} x^2 + y^2 = 25 \\ 5x^2 + y^2 = 25 \end{cases}$$

$$9) \begin{cases} x^2 + 4y^2 = 8 \\ 4x^2 + y^2 = 17 \end{cases}$$

$$10) \begin{cases} 9x^2 + y^2 = 18 \\ y^2 - 3x^2 = 6 \end{cases}$$

$$11) \begin{cases} 4x^2 - y^2 = 12 \\ 3y^2 - 2x^2 = 4 \end{cases}$$

$$12) \begin{cases} 2x^2 + 3y^2 = 30 \\ 3x^2 - 2y^2 = 19 \end{cases}$$

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

$$14) \begin{cases} 9x^2 + 7y^2 = 1 \\ 9y^2 + 7x^2 = 1 \end{cases}$$

Answers to Solving A Quadratic System

1) $(0,0), (1,1), \left(-\frac{1}{2} + \frac{\sqrt{3}i}{2}, -\frac{1}{2} - \frac{\sqrt{3}i}{2}\right), \left(-\frac{1}{2} - \frac{\sqrt{3}i}{2}, -\frac{1}{2} + \frac{\sqrt{3}i}{2}\right)$

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

3) $\left(\frac{6\sqrt{21}}{7}, \frac{4i\sqrt{35}}{7}\right), \left(\frac{6\sqrt{21}}{7}, -\frac{4i\sqrt{35}}{7}\right), \left(-\frac{6\sqrt{21}}{7}, \frac{4i\sqrt{35}}{7}\right), \left(-\frac{6\sqrt{21}}{7}, -\frac{4i\sqrt{35}}{7}\right)$

4) $(-\sqrt{2}, -\sqrt{14}), (-\sqrt{2}, \sqrt{14}), (\sqrt{2}, -\sqrt{14}), (\sqrt{2}, \sqrt{14})$

5) $(-3,4), (3,4), (0,-5)$

6) $(-2,0), (2,0)$

7) $(0,4), (0,-4)$

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

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

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

11) $(-2,-2), (-2,2), (2,-2), (2,2)$

12) $(-3,-2), (-3,2), (3,-2), (3,2)$

13) $\left(-\frac{1}{2}, -\frac{1}{2}\right), \left(-\frac{1}{2}, \frac{1}{2}\right), \left(\frac{1}{2}, -\frac{1}{2}\right), \left(\frac{1}{2}, \frac{1}{2}\right)$

14) $\left(-\frac{1}{4}, -\frac{1}{4}\right), \left(-\frac{1}{4}, \frac{1}{4}\right), \left(\frac{1}{4}, -\frac{1}{4}\right), \left(\frac{1}{4}, \frac{1}{4}\right)$