

## Solving Non-Linear Systems

Date \_\_\_\_\_ Period \_\_\_\_\_

**State if the point given is a solution to the system of equations.**

1)  $x^2 + 4y^2 - 37x + 2y + 162 = 0$   
 $x + 2y + 1 = 0$   
Point:  $(-9, 5)$

2)  $-x^2 + 2y^2 + 10x - 10y - 16 = 0$   
 $-x^2 + 11y^2 + 10x - 55y - 16 = 0$   
Point:  $(2, 5)$

3)  $9x^2 + 9y^2 + 65x + 54y - 63 = 0$   
 $x^2 + 9y^2 - 7x + 54y - 63 = 0$   
Point:  $(-7, -3)$

4)  $x^2 + 3y^2 + 2x + 40y + 29 = 0$   
 $x + y - 1 = 0$   
Point:  $(2, -1)$

**Solve each system of equations.**

5)  $2x^2 + 6y^2 - 43x - 6y + 167 = 0$   
 $x + 2y - 3 = 0$

6)  $-6x^2 + 4y^2 + 3x - 34y + 70 = 0$   
 $x - 2y = -2$

7)  $-2y^2 + 25x - y - 47 = 0$   
 $x - y + 1 = 0$

8)  $2x^2 + y^2 - 9y - 108 = 0$   
 $x + y + 3 = 0$

9)  $x^2 + y^2 + 7x + y - 12 = 0$   
 $x + y = -4$

10)  $-5x^2 + 6y^2 + 22x - 45 = 0$   
 $x - 3y = -3$

11)  $3y^2 + 20x - 24y - 180 = 0$   
 $7x^2 + 3y^2 - 85x - 24y + 198 = 0$

12)  $4x^2 + 4y^2 - 32x + 39y + 90 = 0$   
 $4x^2 + 9y^2 - 32x + 79y + 150 = 0$

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No

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Point:  $(2, 5)$

Yes

3)  $9x^2 + 9y^2 + 65x + 54y - 63 = 0$

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4)  $x^2 + 3y^2 + 2x + 40y + 29 = 0$

$x + y - 1 = 0$

Point:  $(2, -1)$

Yes

Solve each system of equations.

5)  $2x^2 + 6y^2 - 43x - 6y + 167 = 0$

$x + 2y - 3 = 0$

$(7, -2)$

6)  $-6x^2 + 4y^2 + 3x - 34y + 70 = 0$

$x - 2y = -2$

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

7)  $-2y^2 + 25x - y - 47 = 0$

$x - y + 1 = 0$

$(5, 6)$

8)  $2x^2 + y^2 - 9y - 108 = 0$

$x + y + 3 = 0$

$(3, -6), (-8, 5)$

9)  $x^2 + y^2 + 7x + y - 12 = 0$

$x + y = -4$

$(-7, 3), (0, -4)$

10)  $-5x^2 + 6y^2 + 22x - 45 = 0$

$x - 3y = -3$

$(3, 2)$

11)  $3y^2 + 20x - 24y - 180 = 0$

$7x^2 + 3y^2 - 85x - 24y + 198 = 0$

$(6, 10), (6, -2), (9, 8), (9, 0)$

12)  $4x^2 + 4y^2 - 32x + 39y + 90 = 0$

$4x^2 + 9y^2 - 32x + 79y + 150 = 0$

$(7, -2), (1, -2), (8, -6), (0, -6)$