

Name: _____

Date: _____

Systems 2 Exceeds Practice

Solve each of the following systems of equations.

1) $x - y = 3$
 $(x - 2)^2 + (y + 3)^2 = 4$

$x = y + 3$

$(y + 3 - 2)^2 + (y + 3)^2 = 4$

$2(y^2 + 4y + 3) = 0$

$(y + 1)^2 + (y + 3)^2 = 4$

$2(y + 3)(y + 1) = 0$

$y^2 + 2y + 1 + y^2 + 6y + 9 = 4$

$y = -3 \quad y = -1$

$2y^2 + 8y + 10 = 4$

$x = 0 \quad x = 2$

$2y^2 + 8y + 6 = 0$

$(0, -3) \quad (2, -1)$

3) $(3x^2 + 2y^2 = 35) - 4$
 $(4x^2 + 3y^2 = 48) \cdot 3$

$3x^2 + 2(2)^2 = 35$

$-12x^2 - 8y^2 = -140$

$3x^2 + 8 = 35$

$12x^2 + 9y^2 = 144$

$3x^2 = 27$

$y^2 = 4$

$x^2 = 9$

$y = \pm 2$

$x = \pm 3$

$(3, 2) \quad (-3, 2)$
 $(-3, 2) \quad (-3, -2)$

5) $4x^2 - y^2 = 4$
 $4x^2 + y^2 = 4$

$4 - y^2 = 4$

$8x^2 = 8$

$-y^2 = 0$

$x^2 = 1$

$y^2 = 0$

$x = \pm 1$

$y = 0$

$(1, 0) \quad (-1, 0)$

7) $16x^2 - 4y^2 - 60 = 0$
 $-16(x^2 - y^2 - 3 = 0)$
 $-16x^2 + 16y^2 + 48 = 0$

$12y^2 - 12 = 0$

$12(y^2 - 1) = 0$

$y = \pm 1$

$x^2 - (1)^2 - 3 = 0$

$(2, 1) \quad (-2, 1)$
 $(2, -1) \quad (-2, -1)$

$x^2 - 4 = 0$

$x^2 = 4$

$x = \pm 2$

2) $4x^2 + y^2 = 13$
 $-x^2 + y^2 = 10$

$4(1)^2 + y^2 = 13$
 $y^2 = 9$
 $y = \pm 3$

$3x^2 = 3$

$x^2 = 1$

$x = \pm 1$

$(1, 3) \quad (1, -3)$

$4(-1)^2 + y^2 = 13$

$y^2 = 9$

$y = \pm 3$

$(-1, 3) \quad (-1, -3)$

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

$-x^2 - 6 = 5$

$-x^2 = 11$

$x^2 = -11$

$(0, 5)$

$y^2 + y = 30$

$y^2 + y - 30 = 0$

$(y + 6)(y - 5) = 0$

$y = -6 \quad y = 5$

$-x^2 + 5 = 5$

$-x^2 = 0$

$x^2 = 0$

$x = 0$

6) $(3x^2 + 4y^2 - 16 = 0) \cdot 3$
 $(2x^2 - 3y^2 - 5 = 0) \cdot 4$

$3(2)^2 + 4y^2 = 16$

$12 + 4y^2 = 16$

$4y^2 = 4$

$y^2 = 1$

$y = \pm 1$

$9x^2 + 12y^2 - 48 = 0$

$8x^2 - 12y^2 - 20 = 0$

$17x^2 - 68 = 0$

$17x^2 = 68$

$x^2 = 4 \quad x = \pm 2$

$(2, 1) \quad (-2, 1)$

$(2, -1) \quad (-2, -1)$

8) $x^2 - 4y^2 = -7$
 $(3x^2 + y^2 - 31 = 0) \cdot 4$
 $12x^2 + 4y^2 = 124$

$13x^2 = 117$

$x^2 = 9$

$x = \pm 3$

$3^2 - 4y^2 = -7$

$9 - 4y^2 = -7$

$-4y^2 = -16$

$y^2 = 4$

$y = \pm 2$

$(3, 2)$

$(3, -2)$

$(-3, 2)$

$(-3, -2)$