Honors Algebra II/Trig
9.3 Worksheet

Name: Key

Solve each system.

1. $x^2 - y^2 = -16$
   $8x^2 - 3y^2 = -3$

$-3(x^2 - y^2 = -16)$

$-3x^2 + 3y^2 = 48$
$8x^2 - 3y^2 = -3$

$5x^2 = 45$
$x^2 = 9$
$x = \pm 3$

$(3)^2 - y^2 = -16$
$9 - y^2 = -16$
$-y^2 = -25$
$y^2 = 25$
$y = \pm 5$

(3,5)
(3,-5)
(-3,5)
(-3,-5)

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

$y^2 + y = 20$
$y^2 + y - 20 = 0$
$(y+5)(y-4) = 0$
$y = -5, 4$

$x^2 + 25 = 25$
$x^2 = 0$
$x = 0$

$x^2 + 4^2 = 25$
$x^2 + 16 = 25$
$x^2 = 9$
$x = \pm 3$

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

3. $x^2 + y^2 = 100$
   $8x^2 + 13y^2 = 1405$

$-8(x^2 + y^2 = 100)$

$-8x^2 - 8y^2 = -800$

$5y^2 = 605$
$y^2 = 121$
$y = \pm 11$

$x^2 + (11)^2 = 100$
$x^2 + 121 = 100$
$x^2 = -21$

no solution

4. $20x^2 - 3y^2 + 12y = -16$

$-(20x^2 + 3y^2 = 128)$

$20x^2 - 3y^2 + 12y = -16$

$-20x^2 - 3y^2 \quad = 128$

$-6y^2 + 12y = -144$

$-6(y^2 - 2y = 24)$

$-6(y^2 - 2y - 24) = 0$

$(y-6)(y+4) = 0$

$y = 6, -4$

$20x^2 + 3(6)^2 = 128$

$20x^2 + 108 = 128$

$20x^2 = 20$

$x^2 = 1$

$x = \pm 1$

$20x^2 + 3(-4)^2 = 128$

$20x^2 + 48 = 128$

$20x^2 = 80$

$x^2 = 4$

$x = \pm 2$

(1, 6) (2, -4)

(-1, 6) (-2, -4)

5. $y = x^2 + 8x + 9$

$x - y = -3$

$x + 3 = y$

$x + 3 = x^2 + 8x + 9$

$0 = x^2 + 7x + 6$

$0 = (x+1)(x+6)$

$x = -1, -6$

$y = (-1)^2 + 8(-1) + 9$

$y = 1 - 8 + 9$

$y = 2$

$y = (-6)^2 + 8(-6) + 9$

$36 - 48 + 9$

$y = -3$

(-1, 2)

(-6, -3)