Algebra 2

Name Key ID: 1

Systems Review 2

Date _____ Period ____

Solve each system by elimination.

1) $-2r + s - t = 13$
$-r - s + t = 5$
$r + 2s - t = -9$

(-6, -4, -5)

$-2r + s - t = 13$
$-r - s + t = 5$

$-3r = 18$
$r = -6$

$6 + 4 + t = 5$
$10 + t = 5$
$t = -5$

$-r - s + t = 5$
$r + 2s - t = -9$

$s = -4$

2) $2x + 4y + 4z = -2$
$-6x - 4y - 4z = 14$
$2x + 4z = 2$

(-3, -1, 2)

$2x + 4y + 4z = -2$
$-6x - 4y - 4z = 14$

$-4x = 12$
$x = -3$

$2(-3) + 4z = 2$
$-6 + 4z = 2$
$4z = 8$
$z = 2$

$2(-3) + 4y + 4(2) = -2$
$-6 + 4y + 8 = -2$
$4y + 2 = -2$
$4y = -4$
$y = -1$

3) $x + 2y - 3z = -2$
$5x + 4y = -22$
$-6x + 3y + 3z = -3$

(-2, -3, -2)

$x + 2y - 3z = -2$
$-6x + 3y + 3z = -3$

$-5x + 5y = -5$
$5x + 4y = -22$

$9y = -27$
$y = -3$

$5x + 4(-3) = -22$
$5x - 12 = -22$
$5x = -10$
$x = -2$

$-2 + 2(-3) - 3z = -2$
$-2 - 6 - 3z = -2$
$-8 - 3z = -2$
$-3z = 6$
$z = -2$

4) $y - 2z = -7$
$-2x - y + 2z = 11$
$2x + y + 5z = 17$

(-2, 1, 4)

$-2x - y + 2z = 11$
$2x + y + 5z = 17$

$7z = 28$
$z = 4$

$y - 2(4) = -7$
$y - 8 = -7$
$y = 1$

$2x + 1 + 20 = 17$
$2x + 21 = 17$
$2x = -4$
$x = -2$

5) $-x-4y-z=-13$
$(-x+2y+2z=-18)2$
$-5x-2y+4z=-16$

No Solution

$-x-4y-z=-13$
$-2x+4y+4z=-36$
$-3x+3z=-49$

$-x+2y+2z=-18$
$-5x-2y+4z=-16$
$-6x+6z=-34$

$-2(-3x+3z=-49)$
$-6x+6z=-34$
$6x-6z=98$
$0=64$

6) $(x+5y+3z=-3)5$
$(4x-y-5z=-3)3$
$x+2y+5z=-15$

(-4, 2, -3)

$5x+25y+15z=-15$
$12x-3y-15z=-9$
$17x+22y=-24$

$4x-y-5z=-3$
$x+2y+5z=-15$
$(5x+y=-18)-22$
$17x+22y=-24$
$-110x-22y=396$
$-93x=372$
$x=-4$

$-20+y=-18$
$y=2$

$-4+10+3z=-3$
$6+3z=-3$
$3z=-9$
$z=-3$

7) $(5x-5y+5z=30)4$
$(2x+2y+4z=6)5$
$5x+5y=25$

(6, -1, -1)

$-20x+20y-20z=-120$
$10x+10y+20z=30$
$-10x+30y=-90$
$2(5x+5y=25)$

$-10x+30y=-90$
$10x+10y=50$
$40y=-40$
$y=-1$

$5x-5=25$
$5x=30$
$x=6$

$30+5+5z=30$
$35+5z=30$
$5z=-5$
$z=-1$

8) $-x-4y-5z=1$
$-4(3x-y-3z=5)$
$-x+4y-6z=-16$

(2, 2, 1)

$-x-4y-5z=1$
$-12x+4y+12z=-20$
$-13x+7z=-19$

$12x-4y-12z=20$
$-x+4y-6z=-16$
$(11x-18z=4)7$
$(-13x+7z=-19)18$
$77x-126z=28$
$-234x+126z=-342$
$-157x=-314$
$x=2$

$22-18z=4$
$-18z=-18$
$z=1$

$-2+4y-6=-16$
$-8+4y=-16$
$4y=8$
$y=2$

Solve each system of equations.

9) $3x^2 + 4y^2 - 96x + 3y - 22 = 0$
$3x - y = -2$ $y = 3x + 2$

$3x^2 + 4(3x+2)^2 - 96x + 3(3x+2) - 22 = 0$
$3x^2 + 4(9x^2 + 12x + 4) - 96x + 9x + 6 - 22 = 0$
$3x^2 + 36x^2 + 48x + 16 - 96x + 9x + 6 - 22 = 0$
$39x^2 - 39x = 0$
$39x(x-1) = 0$
$x = 0, 1$

$y = 3(0)+2 = 2$
$y = 3(1)+2 = 5$

$(0,2), (1,5)$

10) $6x^2 - 5y^2 - 102x + y - 122 = 0$
$2x + y = 1$ $y = -2x + 1$

$6x^2 - 5(-2x+1)^2 - 102x + (-2x+1) - 122 = 0$
$6x^2 - 5(4x^2 - 4x + 1) - 102x - 2x + 1 - 122 = 0$
$6x^2 - 20x^2 + 20x - 5 - 102x - 2x - 121 = 0$
$-14x^2 - 84x - 126 = 0$
$-14(x^2 + 6x + 9) = 0$
$-14(x+3)(x+3) = 0$
$x = -3$

$y = -2(-3)+1 = 6+1$
$y = 7$

$(-3,7)$

11) $2y^2 - 84x - 4y + 138 = 0$
$3x + y = 3$ $y = -3x + 3$

$2(-3x+3)^2 - 84x - 4(-3x+3) + 138 = 0$
$2(9x^2 - 18x + 9) - 84x + 12x - 12 + 138 = 0$
$18x^2 - 36x + 18 - 84x + 12x - 12 + 138 = 0$
$18x^2 - 108x + 144 = 0$
$18(x^2 - 6x + 8) = 0$
$18(x-4)(x-2) = 0$
$x = 4, 2$

$y = -3(4)+3 = -9$
$y = -3(2)+3 = -6+3 = -3$

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

12) $x^2 + y^2 + 30x - y + 14 = 0$
$2x + y - 3 = 0$ $y = -2x + 3$

$x^2 + (-2x+3)^2 + 30x - (-2x+3) + 14 = 0$
$x^2 + 4x^2 - 12x + 9 + 30x + 2x - 3 + 14 = 0$
$5x^2 + 20x + 20 = 0$
$5(x^2 + 4x + 4) = 0$
$5(x+2)(x+2) = 0$
$x = -2$

$y = -2(-2)+3 = 7$

$(-2,7)$

13) $3x^2 + 4y^2 + 123x - 2y = 0$
$-3x + y = 0$ $y = 3x$

$3x^2 + 4(3x)^2 + 123x - 2(3x) = 0$
$3x^2 + 4(9x^2) + 123x - 6x = 0$
$3x^2 + 36x^2 + 123x - 6x = 0$
$39x^2 + 117x = 0$
$39x(x+3) = 0$
$x = 0, -3$

$(0,0), (-3,-9)$

14) $x^2 + y^2 + 12x + 2y - 3 = 0$
$3x - y = 3$ $y = 3x - 3$

$x^2 + (3x-3)^2 + 12x + 2(3x-3) - 3 = 0$
$x^2 + 9x^2 - 18x + 9 + 12x + 6x - 6 - 3 = 0$
$10x^2 = 0$
$x^2 = 0$
$x = 0$

$y = 3(0) - 3 = -3$

$(0,-3)$