Sec 5.1.1 Systems of Equations
(2 variables)

Determine if (-3,5) is a
solution to

$$9x + 7y = 8.$$
$$8x - 9y = -69$$

$$9(-3) + 7(5) = 8?$$
$$-27 + 35 = 8? \text{ yes}$$

$$8(-3) - 9(5) = -69?$$
$$-24 - 45 = -69$$

Solve using the substitution method-

$x = 3y + 7$ $(-17, -8)$ $2x - 3y = -13$
$x = 2y - 1$ $y = 2x + 7$

$3y + 7 = 2y - 1$

$y = -8$

$x = 3(-8) + 7$
$= -24 + 7$
$= -17$

Solve using the a combination-
(aka, addition, subtraction,
multiplication)

add

$-9x - 6y = 18$ subtract

$-(-9x + y = 18)$

$$-7y = 0$$

$$y = 0$$

$$-9x = +18$$

$$x = -2$$

$$(-2, 0)$$

$-x + 8y = 14$

$+ (x + 3y = -3)$

$$11y = 11$$

$$y = 1$$

$$-x + 8 = 14$$

$$-x = 6 \quad x = -6$$

$$(-6, 1)$$

Solve using the a combination-

$(3x - 7y = 13)2 \rightarrow 6x - 14y = 26$

$6x + 5y = 7$

$-(6x + 5y = 7)$

$\overline{\hspace{3cm}}$

$-19y = 19$

$6x - 5 = 7 \longleftarrow y = -1$

$6x = 12$

$x = 2$

$(2, -1)$

etermine the point of intersection-

$$6\left(\frac{x}{6} - \frac{y}{2} = \frac{1}{3}\right) \rightarrow x - 3y = 2$$

$$x + 2y = -3 \qquad -(x + 2y = -3)$$

$$-5y = 5$$

$$y = -1$$

back sub...

You're solving a system...
  ....all the variables   cancel and
            a true statement
                  (i.e. 3 = 3) remains...

infinitely many
solutions

You're solving a system...
  ....all the variables   cancel and
            a false statement
                  (i.e. 0 = 2) remains...

$\emptyset$

Suggested Practice
Section 5.1
page 527
1,5,9,15,17
19,23,29,
31,33

Solutions-

1. solution
5. (1,3)
9. (-22,-5)
15. (5,4)
17. (7,3)

19. (2,-1)
23. (-4,3)
29. (7/25,-1/25)
31. no solution
33. infinitely many solutions