3.2 Solve Linear Systems Algebraically

EXAMPLE 1 **Use the substitution method**

Solve the system using the substitution method.

$$2x + 5y = -5$$
$$x + 3y = 3$$

$x = -3y + 3$

$2(-3y+3) + 5y = -5$

$-6y + 6 + 5y = -5$

$-y + 6 = -5$

$-y = -11$

$y = 11$

$x = -3(11) + 3$

$x = -30$

$(-30, 11)$

EXAMPLE 2

Solve the system using the substitution method.

$$4x + 3y = -2$$
$$x + 5y = -9$$

$x = -5y - 9$

$4(-5y-9)+3y=-2$

$-20y-36+3y=-2$

$-17y-36=-2$

$-17y=34$

$y=-2$

$x=-5(-2)-9$

$x=1$

$(1,2)$

EXAMPLE 3

Solve the linear system.

$$x - 2y = 4$$
$$3x - 6y = 8$$

$x = 2y + 4$

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

$6y + 12 - 6y = 8$

$12 \neq 8$

no solution

55. **GUITAR SALES** In one week, a music store sold 9 guitars for a total of $3611. Electric guitars sold for $479 each and acoustic guitars sold for $339 each. How many of each type of guitar were sold?