

Name:

Date:

Class:

### Pre-Assessment Key

For the next system of linear equations:

$$x + 2y = -3$$

$$2x - 3y = 5$$

(a). Find the solution using the Substitution Method

Label the equations as (1) and (2):

$$x + 2y = -3 \quad (1)$$

$$2x - 3y = 5 \quad (2)$$

Solve for  $x$  in equation (1) and label this new equation (3):

$$x = -2y - 3 \quad (3)$$

Substitute this expression for  $x$  in equation (2):

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

Solve this equation to find a value for  $y$ :

$$-4y - 6 - 3y = 5$$

$$-7y - 6 = 5$$

$$-7y = 11$$

$$y = -11/7$$

Substitute the found value for  $y$  in (3) to find the value for  $x$ :

$$x = -2(-11/7) - 3$$

$$x = 22/7 - 3$$

$$x = 22/7 - 21/7$$

Solution of the system:

$$x = 1/7$$

$$(x, y) = (-11/7, 1/7)$$

(b). Write the system of equations in matrix form:

$$x + 2y = -3$$

$$2x - 3y = 5$$

$\Rightarrow$

$$\begin{bmatrix} 1 & 2 \\ 2 & -3 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} -3 \\ 5 \end{bmatrix}$$