Pre-Assessment Key

For the next system of linear equations:

\[ \begin{align*}
  x + 2y &= -3 \\
  2x - 3y &= 5
\end{align*} \]

(a). Find the solution using the Substitution Method

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

\[ \begin{align*}
  x + 2y &= -3 \\
  2x - 3y &= 5
\end{align*} \] (1) (2)

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

\[ x = -2y - 3 \] (3)

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

\[ 2(-2y - 3) - 3y = 5 \]

Solve this equation to find a value for \( y \):

\[ -4y - 6 - 3y = 5 \]
\[ -7y - 6 = 5 \]
\[ -7y = 11 \]
\[ y = -11/7 \]

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

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