Exercise 6

For the following exercises, determine whether the lines given by the equations below are parallel, perpendicular, or neither parallel nor perpendicular:

$$4x - 7y = 10$$

$$7x + 4y = 1$$

Solution

Solve the given equations for y.

$$\begin{cases} -7y = 10 - 4x \\ 4y = 1 - 7x \end{cases}$$

$$\begin{cases} y = -\dfrac{10}{7} + \dfrac{4}{7}x \\ y = \dfrac{1}{4} - \dfrac{7}{4}x \end{cases}$$

The lines are perpendicular because one slope $(-7/4)$ is the negative reciprocal of the other $(4/7)$.