Exercise 11

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

$$y = \frac{3}{4}x - 9$$
$$-4x - 3y = 8$$

Solution

Solve each of these equations for y.

$$\begin{cases} y = \dfrac{3}{4}x - 9 \\ -3y = 4x + 8 \end{cases}$$

$$\begin{cases} y = \dfrac{3}{4}x - 9 \\ y = -\dfrac{4}{3}x - \dfrac{8}{3} \end{cases}$$

Notice that the slope of the second line $(-4/3)$ is the negative reciprocal of that of the first line $(3/4)$, so these lines are perpendicular.