Exercise 22

Find a formula for the inverse of the function.

$$f(x) = \frac{4x - 1}{2x + 3}$$

Solution

Solve for x.

$$f(x)(2x + 3) = 4x - 1$$

$$2xf(x) + 3f(x) = 4x - 1$$

$$2xf(x) - 4x = -3f(x) - 1$$

$$2x[f(x) - 2] = -3f(x) - 1$$

$$x = \frac{-3f(x) - 1}{2[f(x) - 2]}$$

This inverse function gives the value of x corresponding to output $f(x)$. One could make it its own function by calling x f^{-1} and replacing $f(x)$ with x.

$$f^{-1} = \frac{-3x - 1}{2(x - 2)}$$