

2.5

29. $f(x) = 5x + 1$

$$y = 5x + 1$$

$$x^{-1} = 5y + 1^{-1}$$

$$\frac{x-1}{5} = \frac{5y}{5}$$

$$\frac{x-1}{5} = y$$

$$y = \frac{x-1}{5}$$

$$\text{Writes } f^{-1} \quad f^{-1}(x) = \frac{x-1}{5}$$

$$f(x) = 5x + 1$$

$$f^{-1}(x) = \frac{x-1}{5}$$

$$\begin{aligned} (f \circ f^{-1})(x) &= 5\left(\frac{x-1}{5}\right) + 1 \\ &= x - 1 + 1 \end{aligned}$$

$$= x$$

$$(f^{-1} \circ f)(x) = \frac{(5x+1)-1}{5}$$

$$= \frac{5x}{5}$$

$$= x$$

$$30. \quad g(x) = -2x - 7 \quad g^{-1}(x) = -\frac{x+7}{2}$$

$$(g \circ g^{-1})(x) = -2\left(-\frac{x+7}{2}\right) - 7$$

$$= x + 7 - 7$$

$$= x$$

$$(g^{-1} \circ g)(x) = -\frac{-2x - 7 + 7}{2}$$

$$= \frac{2x}{2}$$

$$= x$$