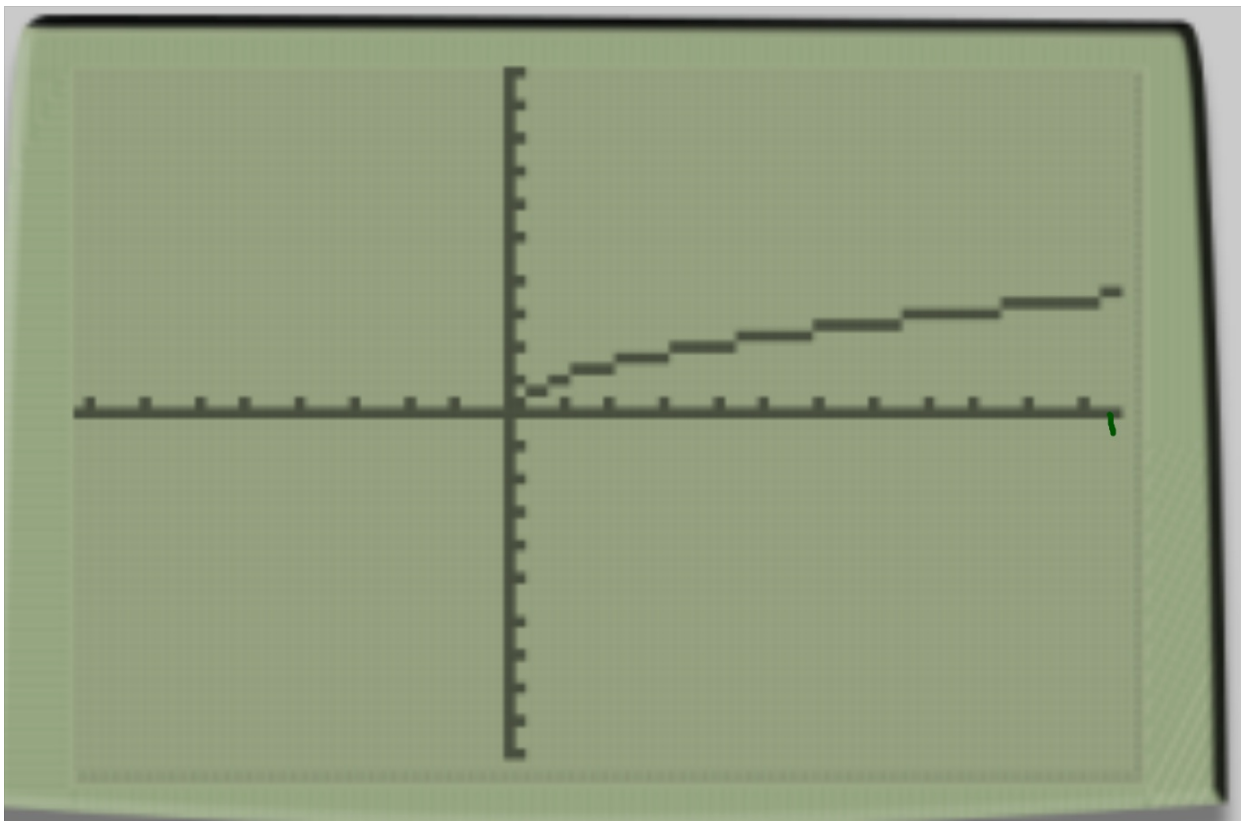


<p>C</p> <p>fish</p>	<p>Sooooo</p> <p>NOW NOW</p> <p>NOW NOW</p>	<p>E4R</p>
<p>GOLF GOLF</p> <p>GOLF GOLF</p>	<p>cow</p>	<p>PICKET PICKET PICKET PICKET</p>
<p>It Came</p> <p>MIDNIGHT</p>	<p>PAID</p> <p>I'M</p> <p>WORKED</p>	<p>STYgoLE</p>



$(g \circ f)(x) = 0$ — set function
= to zero
+ solve for
 x

$$(g \circ f)(0)$$

now said
 x is zero

$$g(x) = x - 5$$

$$f(x) = x^2 + 2x + 1$$

$$\begin{aligned}(g \circ f)(x) &= g(f(x)) \\ &= x^2 + 2x + 1 - 5 \\ &= x^2 + 2x - 4\end{aligned}$$

$$x^2 + 2x - 4 = 0$$

Questions:

Notes:

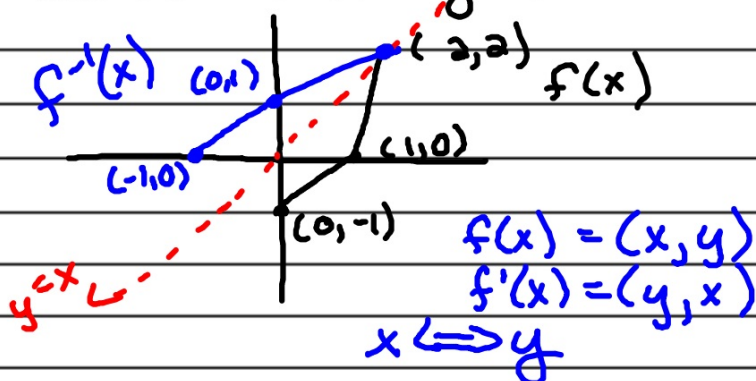
1-5 INVERSES CONTINUED

FINDING INVERSES ALGEBRAICALLY

Recall: inverses' graphs are reflected across the line $y = x$

$f(x)$:
 $D: [0, 2]$
 $R: [-1, 2]$

$f^{-1}(x)$:
 $D: [-1, 2]$
 $R: [0, 2]$



Given a function $f(x)$, replace y with x and x with y and solve for "new" y to find $f^{-1}(x)$

Questions:

Notes:

Ex]

$$f(x) = 3x - 2$$

find $f^{-1}(x)$

① switch $x \leftrightarrow y$

$$x = 3y - 2$$

② solve for y

$$\frac{x + 2}{3} = \frac{3y}{3}$$

③ replace y with $f^{-1}(x)$

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

Ex) Find $f^{-1}(x)$ for $f(x) = \frac{10}{x+7}$

$$\textcircled{1} (y+7)x = \frac{10}{(y+7)} \cdot (y+7)$$

$$xy + 7x = 10$$

$$\frac{xy}{x} = \frac{10 - 7x}{x}$$

$$f^{-1}(x) = \frac{10 - 7x}{x}$$

Check: $(f \circ f^{-1})(x) \stackrel{?}{=} x$

$$f(x) = \frac{10}{x+7} \quad f^{-1}(x) = \frac{10-7x}{x}$$

$$(f \circ f^{-1})(x) = \frac{10}{\left(\frac{10-7x}{x}\right) + 7}$$

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$$= \frac{10}{\frac{10-7x}{x} + \frac{7x}{x}} = \frac{10}{\frac{10-7x+7x}{x}}$$

$$= \frac{10}{\frac{10}{x} \cdot \frac{x}{10}}$$

$$= \frac{10 \cdot x}{10} = x$$