

#17

(a)

$$f(x) = \frac{4}{x} + 9$$

replace $f(x)$ with y :

$$y = \frac{4}{x} + 9$$

switch y and x :

$$x = \frac{4}{y} + 9$$

solve for y :

$$\frac{x-9}{1} = \frac{4}{y}$$

cross-products are equal

$$\frac{(x-9) \cdot y}{x-9} = \frac{4 \cdot 1}{x-9}$$

finished solving for y :

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

- this equation represents a function!

replace y with $f^{-1}(x)$:

$$f^{-1}(x) = \frac{4}{x-9}$$

#17

$$(b) \quad g(x) = \frac{2x-3}{x+1}$$

replace $g(x)$ with y : $y = \frac{2x-3}{x+1}$

switch y and x : $x = \frac{2y-3}{y+1}$

solve for y :

$$x = \frac{2y-3}{y+1}$$

using cross-products rule: $x \cdot (y+1) = (2y-3) \cdot 1$

$$xy + x = 2y - 3$$

$$xy - 2y = -x - 3$$

$$\frac{y(x-2)}{x-2} = \frac{-x-3}{x-2}$$

finished solving for y : $y = \frac{-x-3}{x-2} = \frac{x+3}{2-x}$

the given equation represents a function!

replace y with $g^{-1}(x)$:

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