6.1.38: $f(x) = x^2+9 \quad x \geq 0$ Inverse: $x = y^2+9 \quad y \geq 0$

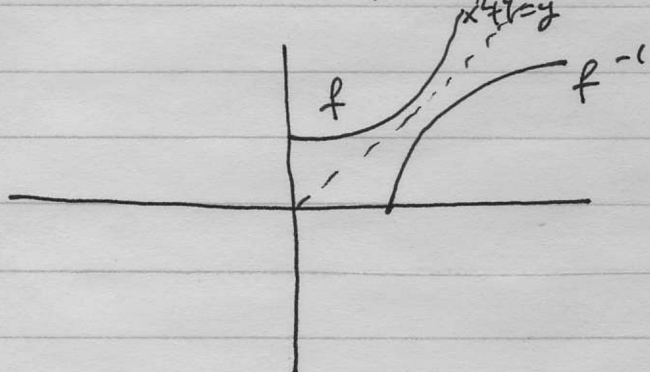
$\mathrm{Dom}(f) = [0, \infty) = \mathrm{Range}(f^{-1})$

$x - 9 = y^2$

$\mathrm{Dom}(f^{-1}) = [9, \infty) = \mathrm{Range}(f)$

$\sqrt{x-9} = y$ since $y \geq 0$

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



Check my answer for inverse:

$f(f^{-1}(x)) = (\sqrt{x-9})^2 + 9 = x - 9 + 9 = x$

$f(f^{-1}(x)) = \sqrt{(x^2+9)-9} = \sqrt{x^2} = x$

6.1.50: $f(x) = \dfrac{2x-3}{x+4}$ Inverse: $x = \dfrac{2y-3}{y+4}$

$\mathrm{Dom}(f) = (-\infty, -4) \cup (-4, \infty) = \mathrm{Range}(f^{-1})$

$\mathrm{Range}(f) = \mathrm{Dom}(f^{-1}) = (-\infty, +2) \cup (+2, \infty)$

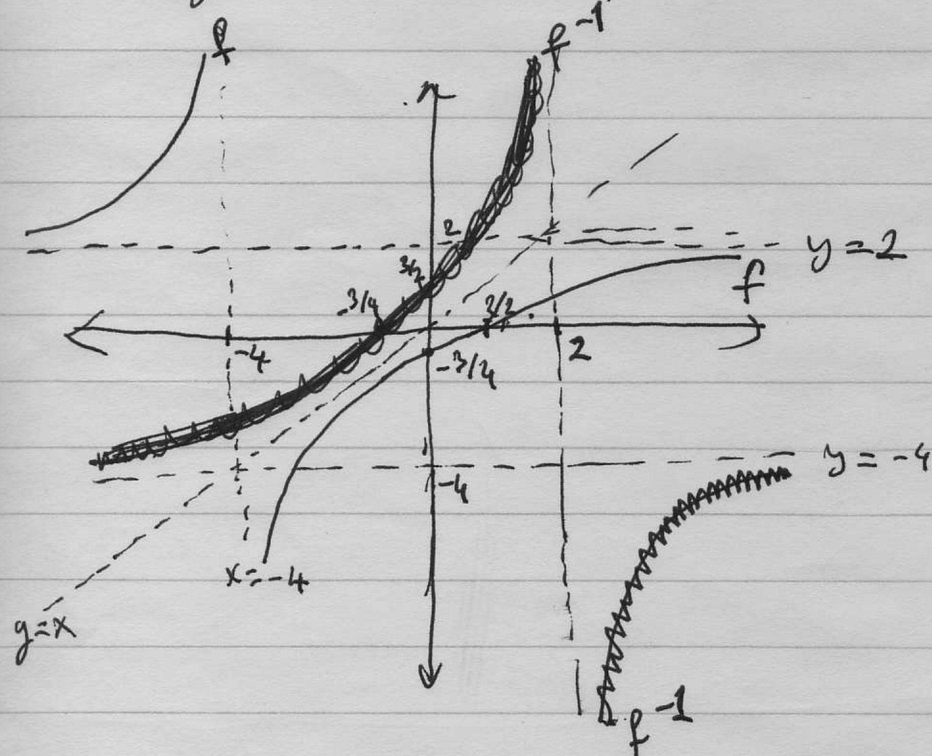
$x(y+4) = 2y-3$

$xy + 4x = 2y - 3$

$xy - 2y = -4x - 3$

$y(x-2) = -4x-3$

$y = \dfrac{-4x-3}{x-2} = f^{-1}(x)$



$\boxed{\text{//// one is } f^{-1} \quad \text{— one is } f}$

Check my answer for inverse: $f(f^{-1}(x)) = f\left(\dfrac{-4x-3}{x-2}\right) = \dfrac{2\left(\frac{-4x-3}{x-2}\right) - 3}{\frac{-4x-3}{x-2} + 4}$

$= \dfrac{-8x-6-3x+6}{-4x-3+4x+8} = \dfrac{-11x}{-11} =$

$f^{-1}(f(x)) = \dfrac{-4\left(\frac{2x-3}{x+4}\right) - 3}{\frac{2x-3}{x+4} - 2} = \dfrac{-8x+12-3x-12}{2x-3-2x-8}$

$= \dfrac{-11x}{-11} = x$