

$$f(x) = \sqrt[3]{2x+3}. \quad \text{Find } f^{-1}$$

$$\sqrt[3]{2y+3} = x \quad \text{LHS}^3 = \text{RHS}^3$$

$$2y+3 = x^3$$

$$2y = x^3 - 3$$

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

Check: want $f \circ f^{-1} = x$.

$$f(f^{-1}(x)) = f\left(\frac{x^3-3}{2}\right) = \sqrt[3]{2\left(\frac{x^3-3}{2}\right) + 3}$$

$$f(\star) = \sqrt[3]{2\star + 3}$$

$$= \sqrt[3]{x^3 - 3 + 3}$$

$$f(\text{smiley}) = \sqrt[3]{2\text{smiley} + 3}$$

$$= \sqrt[3]{x^3} = x !$$

Inverse
Funcs!

$f^{-1}(x)$ sends x back home, after
 f has kidnapped him. $(f^{-1} \circ f)(x) = x$

f sends x back home after

f^{-1} has kidnapped him. $(f \circ f^{-1})(x) = x$

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

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

$$y+2 = x(y+3) = xy+3x \quad \begin{array}{l} \text{Subtract 2} \\ \text{Subtract } xy \end{array}$$

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

$$y(1-x) = 3x-2$$

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

Check: The heck with
THAT!
* Sigh