

5.  $f(x) = 5x - 2$     $g(x) = \frac{x+5}{2}$

$$\begin{aligned} f \circ g &= f\left(\frac{x+5}{2}\right) \\ &= 5\left(\frac{x+5}{2}\right) - 2 \\ &= \frac{5(x+5)}{2} - 2 \\ &= \frac{5x+25}{2} - 2 \\ &= \frac{5x+25}{2} - \frac{4}{2} \\ &= \frac{5x+25-4}{2} \end{aligned}$$

$$\frac{5x+25-4}{2}$$

NOT  
INVERSES

### FINDING INVERSES

NOTE:  $f(x)$  must be 1:1

- ① REPLACE  $f(x)$  WITH  $y$
- ② INTERCHANGE  $x$  AND  $y$
- ③ SOLVE FOR  $y$
- ④ REPLACE  $y$  WITH  $f^{-1}(x)$
- ⑤ IF NECESSARY MAKE  $f^{-1}(x)$  ONE TO ONE  
(LOOK AT GRAPH)

6.  $f(x) = 5x - 3$

①  $y = 5x - 3$

②  $x = 5y - 3$

③  $x + 3 = 5y$

$$\frac{x+3}{5} = \frac{5y}{5}$$

$$\frac{x+3}{5} = y$$

④  $f^{-1}(x) = \frac{x+3}{5}$

7.  $f(x) = (x+3)^3 - 2$

①  $y = (x+3)^3 - 2$

②  $x = (y+3)^3 - 2$

③  $x + 2 = (y+3)^3$

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

$$\sqrt[3]{x+2} = y+3$$

$$-3 + \sqrt[3]{x+2} = y$$

④  $f^{-1}(x) = -3 + \sqrt[3]{x+2}$

8.  $f(x) = \frac{4x-1}{x+5}$

①  $y = \frac{4x-1}{x+5}$

②  $x = \frac{4y-1}{y+5}$

③  $x(y+5) = (y+5)\left(\frac{4y-1}{y+5}\right)$

$$xy + 5x = 4y - 1$$

$$xy - 4y = -5x - 1$$

$$y(x-4) = -5x-1$$

$$\frac{y(x-4)}{x-4} = \frac{-5x-1}{x-4}$$

$$y = \frac{-5x-1}{x-4}$$

④  $f^{-1}(x) = \frac{-5x-1}{x-4}, x \neq 4$

$$\begin{aligned} x-4 &= 0 \\ x &= 4 \end{aligned}$$