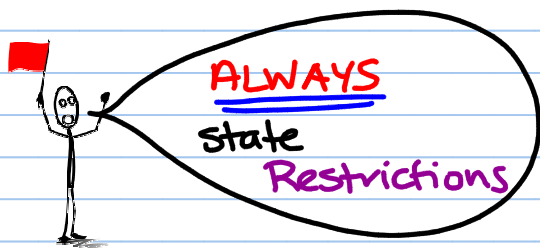


Products (\times) and Quotients (\div) of f^n 's



f^n 's \Rightarrow functions

Products of f^n 's

If $f(x) = x^2 + x - 6$ and $g(x) = 3x^2$

What is $(f \cdot g)(x)$ or $f(x) \cdot g(x)$

$$fg = (x^2 + x - 6)(3x^2)$$

$$= 3x^4 + 3x^3 - 18x^2$$

Quotients

$f(x) = x^2 + x - 6$ $g(x) = 2x + 6$

Restrictions
 $x \neq -3$

$$\left(\frac{f}{g}\right)(x) = \frac{x^2 + x - 6}{2x + 6} = \frac{(x+3)(x-2)}{2(x+3)}$$

$$= \frac{x-2}{2}$$

$$\left(\frac{g}{f}\right)(x) = \frac{2x+6}{x^2+x-6} = \frac{2(x+3)}{(x+3)(x-2)}$$

$$= \frac{2}{x-2}$$

Restrict:
 $x \neq 2, -3$

Ex If $h(x) = f(x) \cdot g(x)$ and $f(x) = 2x+5$
 what is $g(x)$?

(a) $h(x) = +2x\sqrt{x} + 5\sqrt{x}$

Rest: $x \neq -\frac{5}{2}$
 $x \geq 0$

$$h = f \cdot g$$

$$g = \frac{2x\sqrt{x} + 5\sqrt{x}}{2x+5}$$

want g
 =

$$\frac{h}{f} = \frac{f \cdot g}{f}$$

$$g = \frac{\sqrt{x}(2x+5)}{(2x+5)}$$

$$g = \frac{h}{f}$$

$$g = \sqrt{x}$$

