17.2 – Multiplying & Dividing Functions

Function Operations	
Multiplication	$(f \cdot g)(x) = f(x) \cdot g(x)$
Division	$\left(\frac{f}{g}\right)(x) = \frac{f(x)}{g(x)}, g(x) \neq 0$

Examples:

1. Let $f(x) = x^2$ and $g(x) = x + 1$.

$(f \cdot g)(x) =$ $x^3 + x^2$

$f(x) \cdot g(x) = x^2(x+1) = x^3 + x^2$

$\left(\frac{f}{g}\right)(x) =$ $\frac{x^2}{x+1}$, $x \neq -1$

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

g(x) cannot equal 0!
If $x+1=0$,
then $x=-1$. So, x cannot be -1!

2. Let $f(x) = 7x - 5$ and $g(x) = 2x$.

$(f \cdot g)(x) =$ $14x^2 - 10x$

$f(x) \cdot g(x) = (7x-5)(2x) = 14x^2 - 10x$

$\left(\frac{f}{g}\right)(x) =$ $\frac{7x-5}{2x}$, $x \neq 0$

$\frac{f(x)}{g(x)} = \frac{7x-5}{2x}$

g(x) cannot equal 0!
If $2x=0$,
then $x=0$.
So, x cannot be 0!