Pre Calc

M 9/12/16

Pd. 7

Domain

(radicals)

① Square root fcns: under radical cannot be negative

ex) $f(x) = \sqrt{x+1}$, find domain.

$x + 1 \geq 0$

$-1 \quad -1$

$\boxed{x \geq -1}$

$\{x \mid x \geq -1\}$ "builder set"

or

$[-1, \infty)$

ex) $f(x) = \sqrt{-x+1}$

$-x + 1 \geq 0$

$-1 \quad -1$

$-x \geq -1$

$-1 \quad -1$

$\boxed{x \leq 1}$

$\{x \mid x \leq 1\}$

or

$(-\infty, 1]$

② Rational Fcns (fractions): denominator $\neq 0$

ex) $h(x) = \frac{2}{x+3}$

$x + 3 \neq 0$

$-3 \quad -3$

$x \neq -3$

$x \neq -3$ OR

$\{x \mid x \neq -3\}$

OR

$(-\infty, -3), (-3, \infty)$

Operations on fxns

* Sum: $(f+g)(x) = f(x) + g(x)$

* Difference: $(f-g)(x) = f(x) - g(x)$

* Product: $(f \cdot g)(x) = f(x) \cdot g(x)$

* Quotient: $\left(\frac{f}{g}\right)(x) = \frac{f(x)}{g(x)} \quad g(x) \neq 0$

ex) $f(x) = x$, $g(x) = 3x-5$

a) find $(f+g)(x) = f(x) + g(x) = x + 3x - 5$

$= \boxed{4x-5}$

b) find $(f-g)(x) = f(x) - g(x) = x - (3x-5)$

$= x - 3x + 5$

$= \boxed{-2x+5}$

c) find $(f \cdot g)(x) = f(x) \cdot g(x)$

$= (x)(3x-5)$

$= \boxed{3x^2 - 5x}$

d) find $\left(\frac{f}{g}\right)(x) = \frac{f(x)}{g(x)} = \frac{x}{3x-5}$

e) $(f+g)(3) = f(3) + g(3)$

$= 3 + 3(3) - 5$

$= 3 + 9 - 5$

$= 7$

OR

$(f+g)(x) = 4x - 5$ (from earlier)

$(f+g)(3) = 4(3) - 5$

$= 12 - 5$

$= 7$