Bellwork Alg 2B Tuesday, October 3, 2017

Use these functions: $f(x) = x + 3$ $g(x) = x^2 - 4x - 12$ $h(x) = \frac{2x+1}{x-5}$ $k(x) = x^2 - 4$

Perform each function operation. Simplify the resulting function as much as possible. State the Domain of the resulting function.

1. Find $(g \cdot k)(x)$

2. Find $(h + f)(x)$

3. Find $\left(\frac{g}{k}\right)(x)$

4. Find $(f - g)(x)$

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ANSWERS

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1. Find $(g \cdot k)(x)$

$(x^2-4x-12)(x^2-4)$

	x^2	$-4x$	-12
x^2	x^4	$-4x^3$	$-12x^2$
-4	$-4x^2$	$+16x$	$+48$

$x^4 - 4x^3 - 16x^2 + 16x + 48$

Domain: $(-\infty, \infty)$

2. Find $(h + f)(x)$

$\frac{2x+1}{x-5} + \frac{x+3}{1} \cdot \frac{x-5}{x-5}$

$\frac{2x+1}{x-5} + \frac{x^2-2x-15}{x-5}$

$\frac{x^2-14}{x-5}$

Domain: $x \neq 5$

3. Find $\left(\frac{g}{k}\right)(x)$

$\frac{x^2-4x-12}{x^2-4}$

$\frac{(x-6)(x+2)}{(x+2)(x-2)}$

$\frac{x-6}{x-2}$

Domain: $x \neq \pm 2$

4. Find $(f - g)(x)$

$(x+3) - (x^2-4x-12)$

$-x^2 + 5x + 15$

Domain: $(-\infty, \infty)$