Algebra 2

5-05 Performing Function Operations

Ways to combine functions

- Addition: $(f+g)(x) = f(x) + g(x)$
- Subtraction: $(f-g)(x) = f(x) - g(x)$
- Multiplication: $(f \cdot g)(x) = f(x) \cdot g(x)$
- Division: $\left(\frac{f}{g}\right)(x) = \frac{f(x)}{g(x)}$

Given $f(x) = 5\sqrt{x}$ and $g(x) = -8\sqrt{x}$ find

$(f+g)(x)$ $(f-g)(x)$

$(f \cdot g)(x)$ $\left(\frac{f}{g}\right)(x)$

Let $f(x) = 2x^3 + 4x^2 - 8x + 4$ and $g(x) = 3x^3 - 5x^2 + 6x - 9$. Find $(f-g)(x)$ and state the domain. Then evaluate $(f-g)(-1)$.

Let $f(x) = x^3$ and $g(x) = \sqrt{x}$. Find $(fg)(x)$ and state the domain. Then evaluate $(fg)(4)$.

From 2010 to 2020, the populations (in thousands) of City M and City N can be modeled by $M(t) = 3.3t^3 + 12.1t^2 - 0.65t + 15.8$ and $N(t) = 2.5t^3 + 7.8t^2 + 0.41t + 11.9$, where t is the number of years since 2010. Find $(M - N)(t)$ and explain what it represents.

265 #1, 3, 5, 7, 9, 15, 17, 21, 23, 25, 27, 29, 35, 37, 39 = 15