1-2

Practice

Composition of Functions

Given $f(x) = 2x^2 + 8$ and $g(x) = 5x - 6$, find each function.

1. $(f + g)(x)$

2. $(f - g)(x)$

3. $(f \cdot g)(x)$

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

Find $[f \circ g](x)$ and $[g \circ f](x)$ for each $f(x)$ and $g(x)$.

5. $f(x) = x + 5$
$g(x) = x - 3$

6. $f(x) = 2x^3 - 3x^2 + 1$
$g(x) = 3x$

7. $f(x) = 2x^2 - 5x + 1$
$g(x) = 2x - 3$

8. $f(x) = 3x^2 - 2x + 5$
$g(x) = 2x - 1$

9. State the domain of $[f \circ g](x)$ for $f(x) = \sqrt{x - 2}$ and $g(x) = 3x$.

Find the first three iterates of each function using the given initial value.

10. $f(x) = 2x - 6; x_0 = 1$

11. $f(x) = x^2 - 1; x_0 = 2$

12. ***Fitness*** Tara has decided to start a walking program. Her initial walking time is 5 minutes. She plans to double her walking time and add 1 minute every 5 days. Provided that Tara achieves her goal, how many minutes will she be walking on days 21 through 25?