

1.7 Functions & Domain - Challenge

1. Given: $f(x) = \sqrt{x-2}$ and $g(x) = \frac{x}{x-5}$, find $g(f(x))$ and its domain.
2. Given: $f(x) = \frac{1}{\sqrt{2x-9}}$ and $g(x) = x - 4$, find $(f \circ g)(x)$ and its domain.
3. Given: $f(x) = \sqrt{x-16}$ and $g(x) = \sqrt{x-9}$, find $f(g(x))$ and the domain.
4. Given: $f(x) = \sqrt{x}$, $g(x) = \frac{x}{x-1}$, and $h(x) = \sqrt[3]{x}$, find $f(g(h(x)))$ and make an attempt at finding the domain.

Find the domain for the following functions. Trust the process for finding domain for radical and rational functions.

5. $f(x) = \sqrt{x+8} - \sqrt{9-x}$

6. $f(x) = \frac{\sqrt{5-4x}}{\sqrt{2x-7}}$

7. $f(x) = \frac{\sqrt{-5x+12}}{-8x+6}$

8. $f(x) = \frac{x^2-9}{\sqrt{3x+16}}$

$$9. \quad f(x) = \frac{\frac{3x}{4x-9}}{\frac{4-3x}{18-2x}}$$

$$10. \quad f(x) = \frac{-6x-8}{\sqrt{-4x+5}}$$

$$11. \quad f(x) = \frac{\frac{\sqrt{3-2x}}{x+9}}{\frac{x}{1-2x}}$$