1. Determine the domain: $f(x) = 3(x-6)^2 - 4$
2. Determine the domain: $f(x) = \frac{x^2-4}{x+2}$
3. Determine the domain: $f(x) = \sqrt{3x+2}$
4. For the following functions, determine a simplified formula for $f+g$, $f-g$, fg, $\frac{f}{g}$, $f \circ g$, and $g \circ f$: $f(x) = 4x + 5$, $g(x) = x + 3$.
5. For the following functions, determine a simplified formula for $f+g$, $f-g$, fg, $\frac{f}{g}$, $f \circ g$, and $g \circ f$: $f(x) = x^2 - 9$, $g(x) = x + 3$.
6. For the following functions, determine a simplified formula for $f+g$, $f-g$, fg, $\frac{f}{g}$, $f \circ g$, and $g \circ f$: $f(x) = \frac{1}{x-2}$, $g(x) = \frac{1}{x^2-4}$.
7. Determine a formula for the inverse: $f(x) = 3x + 1$
8. Determine a formula for the inverse: $f(x) = \frac{2x-3}{4}$
9. Determine a formula for the inverse: $f(x) = x^3 - 5$
10. Determine a formula for the inverse: $f(x) = \sqrt[5]{2x-3} + 1$
11. Determine a formula for the inverse: $f(x) = \log_2 x + 1$
12. Determine a formula for the inverse: $f(x) = 3e^{2x-5}$
13. Determine a formula for the inverse: $f(x) = \frac{1-2x}{4+5x}$
14. Solve algebraically: $2^3 = 2^{5x+7}$
15. Solve algebraically: $4^{5x-1} = 8^{3x+2}$
16. Solve algebraically: $5^{-x} = 125$
17. Solve algebraically: $\frac{2^{3x-2}}{16^x} = \frac{1}{4^x}$
18. Solve: $\log_2 8 = x$
19. Solve: $\log_{\frac{1}{2}} 8 = x$
20. Solve: $\log_{16} x = \frac{1}{2}$
21. Solve: $\log_4 x = -2$
22. Solve. Round to the nearest hundredth: $x = \log(\ln 1.7$
23. Solve. Round to the nearest hundredth: $\ln x = 4.24$
24. Solve. Round to the nearest hundredth: $\log x = -0.28$
25. Solve. Round to the nearest hundredth: $x = \log_3 7$
26. Solve. Round to the nearest hundredth: $x = \log_5 10$
27. Solve. Round to the nearest hundredth: $x = \log_\pi 5$