1) For $f(x) = \sqrt[3]{x+1}$, $g(x) = 4x^2 - x$ find:

    a. $(g \circ f)(0)$

    b. $(f \circ g)(\frac{1}{2})$

    c. $(f \circ f)(-2)$

2) Use the given pair of functions $f(x) = 3 - x^2$, $g(x) = \sqrt{x} + 1$ to find and simplify the expression $(g \circ f)(x)$ and state the domain of each using interval notation.

3) Show that the given function is one-to-one and find its inverse. Check your answers algebraically and graphically.
$f(x) = \frac{x}{1 - 3x}$.

4) The price of a media player is given as a function of the
   weekly sales x according to the formula $p(x) = 550 - 30x$ for
   $0 \le x \le 40$.
      a. Find $p^{-1}(x)$ and state its domain.
      b. Find and interpret $p^{-1}(125)$.
      c. Find x if $p^{-1}(x) = 0$

5) Perform the indicated operations and simplify.
   $$\sqrt{x} + \frac{x-1}{\sqrt{x}}$$

6) Find all real solutions for $2x - 1 = \sqrt{x + 3}$.

7) Solve the inequality $12 - \sqrt{x - 3} \leq 15$.

8) Evaluate the expressions.

 a. $ln(e^4)$

 b. $\log_6(\frac{1}{36})$

 c. $\log_{13}(\sqrt{13})$

 d. $ln(42^{6log(1)})$

9) For $f(x) = e^x$, $g(x) = 10 - e^{-x}$, sketch the graph of y = g(x) by starting with the graph of y = f(x) and using transformations. Track at least three points of your choice and the horizontal asymptote through the transformations. State the domain and range of g(x).

10) Earthquakes are complicated events and it is not our intent to provide a complete discussion of the science involved in them. Instead, we refer the interested reader to a solid course in Geology or the U.S. Geological Survey's Earthquake Hazards Program found here and present only a simplified version of the Richter scale. The Richter scale measures the magnitude of an earthquake by comparing the amplitude of the seismic waves of the given earthquake to those of a "magnitude 0 event", which was chosen to be a seismograph reading of 0.001 millimeters recorded on a seismometer 100 kilometers from the earthquake's epicenter. Specifically, the magnitude of an earthquake is given by $M(x) = log\left(\frac{x}{1000}\right)$ where x is the seismograph reading in millimeters of the earthquake recorded 100 kilometers from the epicenter.

  a. Show that M(0.001) = 0.
  b. Compute M(70,000).
  c. If the magnitude of the earthquake was 6.7 on the Richter scale, what was the seismograph reading?