1. Section 1.1: Ex. 17,18,19,27,41,43,47.

2. Section 1.2: Ex. 5,7,13,41,49,55,59,65.

3. Express the surface area of a cube in terms of its volume.[Hint: Express first the surface area and the volume in terms of its edge length x and then think.]

4. Characterize the following functions as even or odd or neither giving reasons:
   (a) $f(x) = x^2 + x^4$
   (b) $f(x) = x - 2x^3$
   (c) $f(x) = x + x^2$

5. A Norman window has the shape of a rectangle surmounted by a semi-circle. If the perimeter is 40 ft. express the area of the window in terms of its width.

6. The manager of a furniture factory finds that it costs $2200 to produce 100 chairs in one day and $4800 to produce 300 chairs in one day.
   (a) Express the cost as a function of the number of chairs produced, assuming it is linear.
   (b) What is the slope of the graph and what does it represent?
   (c) What is the y-intercept of the graph and what does it represent?

7. If $f(x) = 1 - \sqrt{x}$, $g(x) = \sqrt{x} - 1$, find their domains and describe $f \circ g$, $f \circ f$, $g \circ g$, $g \circ f$ along with their domains.

8. Use the table to evaluate $f(g(1))$, $g \circ f(3)$, $f \circ g(6)$.

\[
\begin{array}{c|cccccccc}
  x & 1 & 2 & 3 & 4 & 5 & 6 \\
  \hline
  f(x) & 3 & 1 & 4 & 2 & 2 & 5 \\
  g(x) & 6 & 3 & 2 & 1 & 2 & 3 \\
\end{array}
\]
9. If an arrow is shot upward on the moon with a velocity of 58 m/s, its height in meters after $t$ seconds is given by $h = 58t - 0.83t^2$. Find the average velocity in the time interval $[t, t + h]$. Calculate the instantaneous velocity at time $t$. Evaluate the average velocity in the interval $[1, 1.5]$ and also the instantaneous velocity at $t = 1$.

10. Find the $\lim_{x \to 1} \frac{\sqrt{x} - x^2}{1 + \sqrt{x}}$

11. Find the $\lim_{x \to 1} \frac{\sqrt{x} + x^2}{1 - \sqrt{x}}$

12. Find the $\lim_{x \to 1} \frac{1 - x^2}{1 - \sqrt{x}}$

13. Find the $\lim_{x \to 4} \frac{x^3 - 64}{x - 4}$ (Notice that both numerator and denominator tend to zero and try division.)

14. Find the $\lim_{x \to -2} \frac{x^3 + 8}{x^2 - 4}$ (Notice that both numerator and denominator tend to zero. Try factoring and canceling common factors.)