1. You have two spheres. The first one has volume 500 cm³. The second sphere is three times bigger than the first one (that is, the radius of the second sphere is three times bigger than the radius of the first sphere). What is the volume of the bigger sphere in cubic centimeters? What is the volume of the bigger sphere in cubic meters? Use the fact that

$$1 \; meter \quad = \quad 100 \; centimeters$$

2. Find the values of the following limits and sums:

(a) $\lim\limits_{n\to\infty} \left(3 + \dfrac{2}{n}\right)$

(b) $\lim\limits_{x\to 5} \dfrac{x+5}{x^2+5}$

(c) $\lim\limits_{x\to\infty} \dfrac{x}{3x+5}$

(d) $\sum\limits_{n=2}^{n=5}(2n-2)$

3. A line is described by the parametric equations

$$\begin{aligned} x &= 2t+1 \\ y &= 4t+3 \end{aligned}$$

(a) Find the equation of the line in the form $y = mx + b$.
(b) What are the x- and y-coordinates at the point the line in part (a) crosses the line $y = x + 3$?

4. City I starts with a population of 1000 in 1900 and grows by 100 people per year. City II starts with a population of 500 in 1910 and grows by 200 people per year. In what year are the populations of the cities the same?

5. If robots are digging a ditch, the time it will take is proportional to the length of the ditch and inversely proportional to the number of robots working. If 5 robots can dig a ditch 250 feet long in 2 days, how many days will it take 3 robots to dig a ditch 450 feet long?

6. Simplify the expression in each part into a single power of 10 or a single logarithm.

(a) $\left(\dfrac{10^{-2} \times 10^3}{10^4}\right)^3$

(b) $\log(5) + 2\log(3)$

(c) $a\log(b)$

(d) $y\log(x) - \log(x)$

7. Multiply 5.53 and 23.4 together using the table of logs in your book (pg. 289) and doing the following steps:

(a) Find log(5.53) and log(23.4).

(b) Use the numbers in (a) to find $\log(5.53 * 23.4)$.

(c) Find the antilog of your answer to (b).