MATA32 – Winter 2010
Quiz 2: Solutions

Name: _____ KEY _____

1. The population of a town is currently 100,000. Suppose that the population grows at the rate of 5% per year. Find the population 4 years from now.

After one year, the population will be 5% larger than it was at the start, so it will be

$$100,000 + 0.05 \times 100,000 = 100,000(1 + 0.05).$$

After two years, it will have grown by 5% of the above number, i.e. it will be

$$100,000(1 + 0.05) \quad + \quad 0.05 \times 100,000(1 + 0.05) =$$
$$= \quad 100,000(1 + 0.05)(1 + 0.05)$$
$$= \quad 100,000(1 + 0.05)^2$$

Proceeding in the same way, we see that at the end of four years the population will be

$$100,000(1 + 0.05)^4 \approx 121,551.$$

2. Sketch the graph of $y = \log_{1/3} x$. Carefully identify any x- and y-intercepts on your graph.