Math 99 Worksheet (Sections 12.2, 12.3, and 12.5)

1. Graph $f(x) = 2^x$ and state the domain and range of f.
   For what value of x is $f(x) = 64$?

2. Solve the following exponential equations:
   - $2^{2x-3} = 8$
   - $5^{x+2} = 25^{2x+1}$
   - $3^{x+3} = \left(\frac{1}{9}\right)^{3x+2}$

3. Write the following in logarithmic form:
   - $6^3 = 216$
   - $4^{-4} = \frac{1}{256}$
   - $9^{1/2} = 3$

4. Write the following in exponential form:
   - $\log_2 128 = 7$
   - $\log_5 \frac{1}{5} = -1$
   - $\log_{10} 1000 = 3$

5. Solve the following logarithmic equations:
   - $\log_3 x = 2$
   - $\log_x 25 = 2$
   - $\log_4 64 = x$

6. Evaluate each logarithm. Give approximations to four decimal places.
   - log 30
   - ln 100