1. Match each of the following equations to its graph on the axes below. (You should be able to do this without using your calculator.)

   (i) \( y = 2^x \), (ii) \( y = 4 (\frac{1}{2})^x \), (iii) \( y = 2e^x \), (iv) \( y = 4 (\frac{2}{3})^x \), (v) \( y = 5^x \), (vi) \( y = e^x \).

2. Find the domain and range of each of the following functions:

   \[ e^x \quad \ln x \quad \cos x \quad \tan x \quad e^{\sin x} \]

3. Let \( L \) be a line with slope \( m, m \neq 0 \). Characterize geometrically all lines that have slope:

   (a) \( m \)  
   (b) \( -m \)  
   (c) \( -\frac{1}{m} \)

   (compare each one to the line \( L \))

4. Find formulas for the linear function \( L(x) \) and exponential function \( E(x) \) containing the points \((1,66000)\) and \((4,87846)\). For the exponential function, give your answer in the form \( E(x) = ab^x \) or \( E(x) = ae^{kx} \).

5. Estimate the slope of the function \( f(x) = x^x \) at the point \((3, 27)\).

6. A surveyor stands 80 feet from the base of a building and measures an angle of 50° to the top of the steeple on top of the building. The surveyor figures that the center of the steeple lies 20 feet inside the front of the structure. Find the height of the steeple.

7. Now suppose the surveyor from the previous exercise estimates that the center of the steeple lies between 20 and 21 feet inside the front of the structure. Determine how much the extra foot would change the calculation of the height of the building.

8. A man leaves his home, walks 1 miles south, 1 mile west, and returns home by walking 1 mile north. What is the color of the bear that the man passed on his walk.

9. Identify functions \( f \) and \( g \) such that the given function can be written as \( (f \circ g)(x) \) for

   (a) \( \sqrt{x^2 + 1} \) and (b) \( \frac{\cos^2 x - \cos 2x + 2 \sin x + 1}{\sin^2 x + 2} \)

   Note: First, this problem deals with composition of functions. Second, there is not one right answer.