

1. Use your pocket calculator to calculate **y** in the expressions:

$$y = e^{-x}$$

$$y = 1 - e^{-x}$$

$$y = e^x$$

for integral values of  $x$  from 0 to 10. Plot your results on a piece of graph paper and connect the points with smooth curves. Label each curve.

2. Use your pocket calculator to calculate **y** in the expressions:

$$y = \sin x \quad y = \sin 2x$$

$$y = \cos x \quad y = \cos (x/2)$$

for values of  $x$  between 0 and 360 degrees, in steps of 15 degrees. Make sure that your calculator is in "degrees" mode. Plot your results on a piece of graph paper and connect the points with smooth curves. Label each curve and explain the differences between each curve.

3. Use your pocket calculator to calculate **y** in the expressions:

$$y = 8 + 8x$$

$$y = 8 - 8x$$

$$y = 8 + 8x^2$$

$$y = 8 - 8x^2$$

for integral values of  $x$  from 0 to 10. Plot your results on a piece of graph paper and connect the points with smooth curves. Label each curve.

Explain how these four curves differ in appearance and the reasons for these differences.

4. What is the air pressure inside the tire of your bike (or that of a friend)? Use this number to predict how much surface area of the tire will be in contact with the ground when you are sitting on the bike and when you are not sitting on it.

5. If you flip a coin, what should be the number of heads and tails that you get? Flip a coin ten times and state the number of heads that you see. Try to be objective in the way you perform the experiment. Now flip the same coin 100 times. Bring your answer to class on Thursday.

6. Explain what is meant by a part per million. What is the approximate concentration of dishwashing detergent in ppm when you do dishes? Suppose that you want to reduce the concentration to 1 part per trillion of detergent in water in the drops that stay on the glass when you put it in the dish drainer. Estimate how many rinses would it take to do this and explain your answer. Explain in general how rinsing stuff off works.

7. How would you find the surface area of basketball without using a ruler or any other linear measurement device? What about a football? What about the surface area of your skin?

8. Homework from assignments on syllabus as assigned due **next Tuesday**