

Review Problems for Math 34A Spring 2009, Midterm I

The test will be 4 problems, with 2 word problems. A 3x5 notecard is allowed, but no calculators.

1) If I think there are 3000 M & M's in a jar, but there are really 3300, what is the absolute error? What is the percentage error?

2) In 2000, the national gross domestic product (GDP) of Country X was \$72 billion, and in 2005 it was \$94 billion. What was the GDP in 2002?

3) Compute the following limits:

(a) $\lim_{x \rightarrow 1} x^2 - 2$

(b) $\lim_{x \rightarrow -2} \frac{x^2 + x - 2}{x^2 + 6x + 8}$

(c) $\lim_{x \rightarrow \infty} \frac{7x - 102}{3x + 22}$.

4) A grain silo is in the shape of a cylinder with a hemisphere (half a sphere) on top. If the total volume is 1000 m^3 , express the surface area in terms of the radius of the silo.

5) Two bicyclists leave campus at noon. One bikes north at 20 mph, and the other bikes west at 5 mph. Assuming they don't stop, when are they 15 miles apart?

6) 10 adults and 5 children can watch a movie for \$75, but 8 adults and 10 children can watch the movie for \$78. How much would it cost for 6 adults and 10 children to watch the movie?

7) I have two bottles of sugar water. The first bottle is 10% sugar and 90% water. The second is 20% sugar and 80% water. How much of each bottle should I use to get 1 liter of liquid which is 13% sugar?

8) A manufacturer sells lamps at \$6 each and sells 3000 each month. For each \$1 that the price is increased, 1000 fewer lamps are sold each month. It costs \$4 to make one lamp. Express the total profit in terms of the price of a lamp.