ACMAT118 Spring 2024
Professor Manguba-Glover
Section 5.3 Homework (HW 1)   Name: _____

Show all work and simplify all answers before circling/boxing them. If you do the problem incorrectly, or don't show sufficient work, you will be asked to rewrite the problem for full credit.

Due next class. Students who turn assignments in late forfeit their ability to rewrite those problems for credit.

1. Simplify $-4(27)^{2/3}$

2. Simplify $25^{1/8}25^{3/8}$

3. Find a function $f(x) = Ca^x$ that satisfies: $f(1) = 36$, $f(2) = 216$

4. $300 is compounded annually at a rate of 8%.

   (a) Write an equation that denotes how much money there is after t years.

   (b) How much money will there be at the end of 5 years?

5. $750 is compounded monthly at a rate of 6%.

   (a) Write an equation that denotes how much money there is after t years.

   (b) How much money will there be at the end of 17 years?

6. $400 is compounded continuously at a rate of 11%.

   (a) Write an equation that denotes how much money there is after t years.

   (b) How much money will there be at the end of 6 years?

7. A sample of bacteria taken from a river has an initial concentration of 2.1 million bacteria per mililiter, and its concentration doubles each week.

   (a) Find an exponential equation that calculates the concentration (in millions) after x weeks.

   (b) Estimate the concentration (in millions) after 1.9 weeks.

8. A fish fly density is 2 million insects per acre and is decreasing by one-fifth every week.

   (a) Find an exponential equation that calculates the density (in millions) after t weeks.

   (b) Estimate the density (in millions) after 3.2 weeks.