F-LE Rising Gas Prices – Compounding and Inflation

Task

Inflation is the measure of the annual growth in the price of a good or service, computed as the percentage change in price from the previous year. For example, if the price of gasoline rose from \$2.00 a gallon to \$2.20 per gallon in one year, the inflation rate for gasoline for that year would be $\frac{2.20-2.00}{2.00} \times 100 = 10.0$ percent.

a. Suppose in the following year, the price of gasoline rose another twenty cents per gallon to \$2.40. Find the inflation rate for this year. Is it higher or lower than 10 percent?

b. Returning to the case where the previous year ended at a price of \$2.20 per gallon, what price at the end of the current year would give another inflation rate of 10%? Is it higher or lower than \$2.40?

c. The price of a gallon of regular gasoline has roughly doubled over the last 8 years (2004-2012). If we assume a constant annual inflation rate r over this time frame, predict whether or not r is likely to be smaller or larger than 15%. Do you need to know the actual prices in order to solve this? Explain.

d. Use an exponential growth model to compute the value of r from the previous part to one decimal place. Note this value gives a good approximation to the average annual rate of inflation over these eight years, so this value has meaning even if we don't assume a constant annual inflation rate.

e. The nation's overall inflation is often measured as a change in the CPI (Consumer Price Index), a number which measures the prices paid by consumers for a representative basket of goods and services (housing, food, transportation etc). Using data from this table of CPI values, compare gasoline inflation with overall inflation over

the years 2004-2012.