

Math 141 Homework #2

Due Tuesday, 8/28/07

Extra Problem

#1. On Monday 8/20 in class, we talked about modeling the function $P(t)$, where t is the elapsed time (in seconds) since January 1, 2007, 12:01 AM CST, and $P(t)$ is the temperature (in degrees Fahrenheit) at the top of the Campanile. Using climate data from Wikipedia, which we'll assume is reasonably accurate for the sake of the problem, can you come up with a reasonable model for $P(t)$?

Hint: As we had discussed in class, it makes sense to express $P(t)$ as the sum of two trigonometric functions — say $f(t) = A + B \cos(Ct)$ and $g(t) = P + Q \cos(Rt)$ — that have different periods. One of these functions ought to keep track of the changes in temperature from season to season, and the other one is for changes over the course of a single day. Your job is to use the Wikipedia data to figure out appropriate values for the parameters A, B, C, P, Q, R .