# Calculus for the Social Sciences I, FALL 2007

## Worksheet on Exponential Functions

## The Astonishing Price of a Red Sox Ticket

1. Read the article "Sox ticket a toll: Gas prices rose slower" from the *Worcester Telegram & Gazette*, June 15, 2004 by Bill Ballou. What type of function would you use to describe the three graphs showing ticket prices at Fenway Park?

2. Fit an exponential model to the price of a bleacher seat using the prices \$0.75 in 1958 and \$20.00 in 2004 given in the article. *Hint:* Your model should be of the form $P(t) = P_0\, a^t$ where $P$ is the price of a bleacher seat and $t$ is time in years. It is easiest to let $t = 0$ correspond to the year 1958.

3. According to your model for the price of a bleacher seat, what was the price in 1993? How does this compare with the price given in the article? What is the price in 2007? How does this compare? (A bleacher seat today costs \$23.00.) What will the price be when you graduate from Holy Cross?

4. Fit an exponential model to the price of a box seat using the prices \$2.75 in 1958 and \$75.00 in 2004. *Hint:* It is easiest to let $t = 0$ correspond to the year 1958.

5. According to your model for the price of a box seat, what was the price in 1993? How does this compare with the price given in the article? What is the price in 2007? How does this compare? (A box seat today costs \$105.00 although it depends where you sit. An infield dugout box seat at Fenway Park currently costs \$312.00!) According to your model, what will the price be when you graduate from Holy Cross?

6. **EXTRA CREDIT:** Determine how the author came up with the hypothetical prices for gas, hamburger, coffee, lobster, etc. if they had risen "at the same rate as a Red Sox box seat since 1958." Do the numbers come from legitimate mathematics?