

**College of the Holy Cross, Spring Semester, 2019**  
**Math 134 Worksheet 7**  
**Due Thursday, February 21**

1. Find the average value of the function  $4 - x^2$  on the interval  $[0, 2]$ .
2. Suppose that on a particular day the temperature in Worcester  $t$  hours after 6:00AM was given by  $T(t) = 55 + 12 \sin(\pi t/12)$ . Find the average temperature on that day between 6:00AM and 6:00PM.
3. Suppose a savings account earns interest at an annual rate of 8% compounded continuously.
  - (a) What is the annual percentage yield of the account?
  - (b) Suppose the account initially has \$2000 in it. How much money will be in the account after 3 years?
  - (c) How long will it take for the account to double in value?
4. Each of the following income streams is invested in an account that earns 6% interest compounded continuously, over a period of 4 years. Find the future value and present value of each income stream.
  - (a)  $f(t) = 4000$
  - (b)  $f(t) = 1000e^{0.02t}$
5. A right circular cone has height 8 inches and base radius 3 inches. Find its volume.
6. A solid is constructed in such a way that its cross section at height  $y$  inches is a rectangle with side lengths  $2y$  inches and  $\sqrt{y}$  inches. The height of the solid is 4 inches. Find its volume.