

Math 180
Winter 2010

Name _____

Homework #16
Due Tuesday, February 9
No late papers accepted! No excuses!

1. Use the Fundamental Theorem of Calculus to find the derivative of

$$\int_{\sqrt{x}}^0 \sin t^2 dt$$

2. Find the area of the region bounded by the curves and lines.

$$y = \sqrt{x}$$

$$y = x$$

3. Evaluate the integrals.

a) $\int_0^{\pi/2} 7^{\cos t} \sin t dt$

b) $\int_0^2 \frac{\log_2(x+2)}{x+2} dx$

4. The processing of raw sugar has a step called "inversion" that changes the sugar's molecular structure. Once the process has begun, the rate of change of the amount of raw sugar is proportional to the amount of raw sugar remaining. If 1000 kg of raw sugar reduces to 800 kg of raw sugar during the first 10 hours, how much raw sugar will remain after an additional 14 hours?