

## Sections 6.4-6.5 Worksheet

Name/ Uid: \_\_\_\_\_

Date: \_\_\_\_\_

**Exercise 1.** *Compute the following derivatives:*

(a)  $y = 6^{3x}$

(b)  $f(x) = \log_3 e^x$

(c)  $y = \log_{10}(2x^3 + 6x)$

(d)  $y = (\ln x^2)^{2x+3}$

(e)  $y = x^{\cos x}$

**Exercise 2.** *Compute the following integrals:*

(a)  $\int x 2^{x^2} dx$

(b)  $\int \frac{5\sqrt{x}}{\sqrt{x}} dx$

**Exercise 3.** *The population of a certain country is growing at 3.2% per year. Assuming that it is 4.5 million now, what will it be at the end of 1 year? 10 years?*

**Exercise 4.** *If a radioactive substance loses 15% of its radioactivity in 2 days, what is its half life?*

**Exercise 5.** *An object initially at  $26^{\circ}C$  is placed in water having temperature  $90^{\circ}C$ . If the temperature of the object rises to  $70^{\circ}C$  in 5 minutes, what will be the temperature after 5 minutes?*