

Calculus Review—Derivatives and Integrals  
Math 256-01, Fall 2008

Find  $f'(x)$  for each of the following.

1.  $f(x) = \frac{1}{5x-2}$

6.  $f(x) = \frac{x}{\ln x}$

2.  $f(x) = x^2 e^{nx}$

7.  $f(x) = \arctan(ax)$

3.  $f(x) = x^{-n}$

8.  $f(x) = \ln\left(\frac{x-1}{x+1}\right)$

4.  $f(x) = \cos ax$

9.  $f(x) = \sec x \tan x$

5.  $f(x) = \sin \frac{\pi}{2} x$

Evaluate the following indefinite integrals.

10.  $\int \frac{1}{y+5} dy$

15.  $\int e^{-t} dt$

11.  $\int \frac{1}{4+5t} dt$

16.  $\int \frac{4}{\sqrt{t}} dt$

12.  $\int \frac{1}{1+t^2} dt$

17.  $\int \frac{1}{x \ln x} dx$

13.  $\int \frac{5}{t} dt$

18.  $\int x e^{-3x} dx$

14.  $\int \frac{5}{t^2} dt$