

**AP Calculus**

## Derivative Review

Name \_\_\_\_\_

Period \_\_\_\_\_ Date \_\_\_\_\_

Find each derivative and simplify. Write the answer without negative exponents.

1.  $x \ln x$

2.  $\frac{x}{1-x}$

3.  $\sqrt{4+x^2}$

4.  $\cos^3 2x$

5.  $\arctan \frac{x}{3}$

6.  $e^{(\sin x)}$

7.  $\ln\left(\frac{x^2}{x^3-1}\right)$

**AP Calculus**  
Integration Review

Name \_\_\_\_\_  
Period \_\_\_\_\_ Date \_\_\_\_\_

Evaluate each of the integrals.

$$1. \int \sqrt{3x + 1} \, dx$$

$$2. \int_1^2 (3x + 1) \, dx$$

$$3. \int \frac{1}{3x + 1} \, dx$$

$$4. \int \frac{x}{3x + 1} \, dx$$

$$5. \int \frac{2}{1 + x^2} \, dx$$

$$6. \int \frac{1}{\sqrt{1 + x^2}} \, dx$$

$$7. \int e^{(3x+1)} \, dx$$