Test Form _____ Name _____ Date _____

Chapter _____ Class _____ Section _____

1. Evaluate the integral: $\int \sqrt{x^3}\, dx.$

2. Evaluate the integral: $\int 3 \csc x \cot x\, dx.$

3. Evaluate the integral: $\int \frac{x^3 - x^2}{x^2}\, dx.$

4. Evaluate the integral: $\int \frac{\cos^3 \theta}{2 - 2\sin^2 \theta}\, d\theta.$

5. Find the function, $y = f(x)$, if $f'(x) = 2x - 1$ and $f(1) = 3$.

6. Use $a(t) = -32$ feet per second squared as the acceleration due to gravity. A ball is thrown vertically upward from the ground with an initial velocity of 56 feet per second. For how many seconds will the ball be going upward?

7. Find the limit: $\lim_{x \to 0} \frac{e^{x^2} - 1}{2x^2}.$

8. Write the definite integral that represents the area of the region enclosed by $y = 4x - x^2$ and the x-axis.

9. Evaluate the integral: $\int \frac{3 + 4x^{3/2}}{\sqrt{x}}\, dx.$

10. Use the Fundamental Theorem of Calculus to evaluate $\int_{-1}^{1} \left(\sqrt[3]{t} - 2\right) dt.$

11. Find the average value of $f(x) = \sin x$ on the interval $\left[\frac{\pi}{4}, \frac{\pi}{2}\right]$.

12. Evaluate the integral: $\int (ax + b)\, dx.$

13. An object has a constant acceleration of 42 feet per second squared, an initial velocity of -18 feet per second, and an initial position of 3 feet. Find the position function describing the motion of this object.

14. Evaluate the integral: $\int_{-1}^{1} |x|\, dx.$