Name_____ **Calculus Review #10**

1. Evaluate the integral: $\int 6x\,dx$

2. Evaluate: $\int \frac{1}{h^4}\,dh$

3. Evaluate: $\int \frac{4+5x^{\frac{5}{3}}}{\sqrt{x}}\,dx$

4. Find the particular solution of the equation $f'(x) = 2x^{-1/2}$ that satisfies the condition $f(1) = 6$.

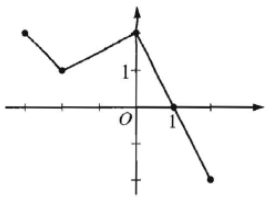
5. Use $a(t) = -32$ ft / s^2 as the acceleration due to gravity. A ball is thrown upward from the ground with an initial velocity of 56 feet per second. For how many seconds will the ball be going upward?

6. Find the area for the region bounded by $f(x) = 9 - x$ and the x-axis between $x = 0$ and $x = 3$ using 6 right-hand rectangles.

7. Evaluate: $\int \sqrt[5]{x^2}\,dx$

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

9.



Graph of f

The graph of the piecewise linear function f is shown. If $g(x) = \int_{-2}^{x} f(t)dt$, which of the following values is greatest?

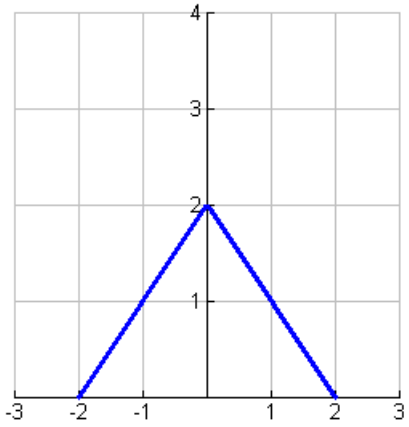
A. $g(-3)$ B. $g(-2)$ C. $g(0)$ D. $g(1)$ E. $g(2)$

10. Evaluate: $\int 3\sec^2 x\,dx$

11. Find the function, $y = f(x)$, if $f''(x) = x^2$, $f'(0) = 7$ and $f(0) = 2$.

12. Find the lower sum for the region bounded by $f(x) = 1 - x^2$ and the x-axis between $x = 0$ and $x = 1$ using 4 rectangles.

13. Write the definite integral that represents the area under the curve for the following problem. Then evaluate the integral.



14. Evaluate the integral: $\int \frac{\sin^3\theta}{1-\cos^2\theta} d\theta$.

15. Evaluate: $\int \frac{\sec^3\theta \tan\theta}{1+\tan^2\theta} d\theta$.

16. A ball is dropped from a height of 300 ft. Its velocity after t seconds is $v = -32t$ ft/sec.

A. How fast is the ball dropping after 4 seconds?

B. Determine the position function.

C. How far has the ball dropped after 4 seconds?

D. How many seconds will it take for the ball to hit the ground?

Given $\int_{-4}^{0} f(x)dx = 5$ and $\int_{0}^{3} f(x)dx = 7$ find the following:

17. $\int_{-4}^{3} f(x)dx$

18. $\int_{-2}^{1} [f(x+2)]dx$

19. $\int_{3}^{3} f(x)dx$