

NAME: _____

MATH 181 QUIZ 4 FALL 2009

This is due Tuesday, Nov. 17th. PLEASE SHOW ALL WORK!

1.) Find the indefinite integral: $\int \frac{w\sqrt{w} + \sqrt{w}}{w^2} dw$ 1. _____

Write as a single fraction.

2.) Find the indefinite integral $\int \frac{\cos^2 \theta}{\csc \theta - \sin \theta} d\theta$ by first 2. _____
simplifying using identities.

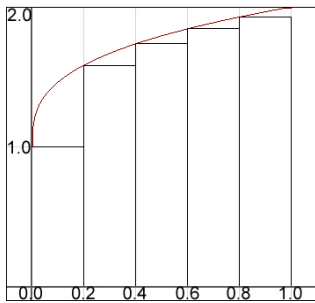
3.) Find the indefinite integral $\int \frac{\cot^2 \theta}{3} d\theta$ by first 3. _____
simplifying using identities.

4.) Find $v(\theta)$ if $\frac{dv}{d\theta} = \frac{8}{\pi} + \sec^2 \theta$ and $v\left(\frac{\pi}{4}\right) = 3$ 4. _____

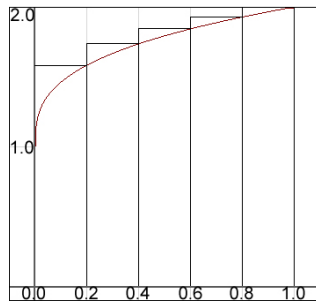
5.) Solve for $r(t)$ if $r''(t) = -\frac{10}{t^3}$ and $r'(1) = 4$ and $r(1) = -6$ 5. _____

6.) Find the sum: $\sum_{i=1}^{10} 2i(i-3)(i+2)$ using summation formulas. 6. _____

7.) (10 pts) Find the lower and upper sums to approximate the area under the curve $y = \sqrt[3]{x} + 1$ between 0 and 1 using 5 rectangles. Lower: _____



Lower



Upper

Upper: _____

8.) Use sigma notation to write the sum: $\frac{0}{1} + \frac{3}{2} + \frac{8}{3} + \frac{15}{4} + \frac{24}{5} + \dots + \frac{99}{10}$ 8. _____

9.) (10 pts) Use the limit process to find the area between the graph $y = 3x + 2x^2$ and the x-axis over $[-2, 1]$. 9. _____

10.) (10 pts) Evaluate $\int_{-1}^0 x^2 - x^3 dx$ by the limit definition.

10. _____

11.) Sketch the region corresponding to $\int_{-2}^2 3 + \sqrt{4 - x^2} dx$.

11. _____

Then use geometric formulas to evaluate the integral.

12.) Suppose f is integrable and that: $\int_{-4}^2 f(x) dx = -5$, $\int_2^8 f(x) dx = \sqrt{13}$.

Use integral rules to find the following: $\int_8^{-4} -4f(x)dx$

12. _____

13.) Evaluate the definite integral $\int_1^8 \frac{4}{x^2} + \frac{2}{\sqrt[3]{x}} dx$

13. _____

14.) Evaluate the definite integral by first simplifying using

identities: $\int_{\frac{2\pi}{3}}^{\frac{5\pi}{4}} \sec \theta (\cos \theta + \sin \theta \tan \theta) d\theta$

14. _____

15.) Use the Second Fundamental Theorem of Calculus

to find: $\frac{d}{dx} \int_4^{\sqrt{x}} \frac{2t+1}{t+2} dt$

15. _____

16.) Find the indefinite integral: $\int \frac{\sec \theta \tan \theta}{\sqrt{\sec \theta}} d\theta$

16. _____

17.) Evaluate the definite integral: $\int_{-2}^6 x^2 \cdot \sqrt[3]{x+2} dx$

17. _____