

Test Chapter 8 A.P. Calculus Name _____

Show all work on your own paper.

1. Determine what must be added to $x^2 + 8x$ to complete the square.

2. Evaluate $\int x \sec^2(3x) dx$

3. Evaluate $\int \sin^2 x \cos^3 x dx$

4. Evaluate $\int \tan^3(3\theta) d\theta$

5. Evaluate $\int \frac{dx}{(x^2 + 4)^{\frac{3}{2}}}$

6. Evaluate $\int \frac{dx}{x^2 - 4x + 8}$

7. Evaluate $\int \frac{x+2}{x-x^3} dx$

8. Evaluate $\int \frac{x^2 dx}{x-2}$

9. Use $n = 4$ subdivisions to approximate the value of the following integral using the trapezoidal rule:

$$\int_0^4 \sqrt{x+1} \, dx$$

10. Use $n = 4$ subdivisions to approximate the value of the following integral using Simpson's rule:

$$\int_1^5 \frac{dx}{\sqrt{x}}$$

11. Decompose $\frac{5x-10}{x^2-3x-4}$ into a sum of partial fractions.

12. Evaluate $\int x^3 \ln|x| \, dx$

13. Evaluate $\int \frac{3}{x^2-6x} \, dx$

14. Evaluate $\int \sin^{-1}(x) \, dx$

15. Evaluate $\int \sin^2(3x) \, dx$

16. The length of a curve from $x=1$ to $x=4$ is given by $\int_1^4 \sqrt{1+9x^4} \, dx$.

If the curve contains the point $(1,6)$, determine the equation of the curve.

Extra Credit:

Evaluate $\int \frac{x^3-2x+3}{x^2-2x-3} \, dx$