

Test Sections 4.1 – 4.3 A.P. Calculus

I. Multiple Choice

1 – 13. Questions unavailable

II. Free Response

SHOW ALL WORK ON YOUR OWN PAPER.

14. State the three basic properties of logarithms.

15. Determine $\frac{dy}{dx}$ if $x^3 - y^3 = 4xy$

16. Evaluate $\frac{d}{dx}(x^e e^x) =$

17. Solve for x : $7^x = 12$

18. Evaluate: $\frac{d}{dx}(\log_5 3x)$

19. Determine $\frac{dy}{dx}$ if $3x^2 + 2y^2 = 441$

20. Derive the formula for the derivative of $y = a^u$,
where u is a function of x and a is a constant.

21. Determine n , given that $\log_2(\log_3(\log_4 2^n)) = 2$

22. Graph the function $y = \ln x$

23. Explain the difference between $y = \log x$ and $y = \ln x$.

24. A spherical balloon is inflated so that its volume is increasing at the rate of 3 cubic feet per minute. How fast is the radius of the balloon increasing at the instant the radius is foot?

25. A conical funnel is 14 inches in diameter and 12 inches deep. A liquid is flowing out at the rate of 40 cubic inches per second. How fast is the depth of the liquid falling when the level is 6 inches deep?