

AB Calculus
Test # 3 (30) Review

21. Graph each of the following:

A) $y = |x| - 3$ B) $y = |x - 3|$ C) $y = \frac{1}{x+2} - 3$ D) $y = \frac{1}{(x-3)^2} - 2$

22. The 4th term in the expansion of $(2x - 3y)^{12}$ is:

23. (A) Solve: $\sin 4x - \frac{\sqrt{3}}{2} = 0, \quad 0 \leq x < 2\pi.$

(B) Identify the conic section whose equation is $2x^2 + 3y^2 - 4x + 2y = 6$. Write the two equations that must be used to graph this equation on a graphing calculator.

24. Find $s'(t)$ if $s(t) = \sqrt{t} + t^{-2} - \frac{1}{\sqrt[3]{t^2}}$.

25. Find $\frac{dy}{dx}$ if $y = 4x^{-1} - 3x^{\sqrt{3}} + 6x^\pi$.

26. (A) Find the half life of a substance that decays exponentially if on November 3 there was 300 g and on November 27 there was only 250 g.

(B) Find y' if $y = 3 \ln x + 2 \sin x - 6e^x - 7 \cos x$.

27. A) Find $f'''(3)$ if $f(x) = \cos x$.

B) Find $\left. \frac{d^2y}{dx^2} \right|_2$ if $y = 3x^3 + 2x^2 + x + 4$.

C) Find the equation of the line tangent to $y = \ln x$ when $x = 3$.

28. A) Sketch $y = \frac{x(x+3)(3-x)}{(x+5)(x+3)(x-2)(x-5)}$.

B) Find $\lim_{h \rightarrow 0} \frac{\sin(6+h) - \sin 6}{h}$

29. (A) Find dy if $y = 3x^{-2} - 4 \ln t + 6 \cos u - k^{2/5}$.

(B) Find $\left. \frac{dy}{dx} \right|_{x=4.279}$ if $y = e^{x^2} - \sin(5x^3)$

30. Graph each function and its reciprocal on the same set of axes:

A) $y = \frac{1}{2}x - 1$
B) $y = x^2 + 4$