

Calculus Practice Problems

1. Given $\log 2 = 0.3010$ and $\log 3 = 0.4771$, find $\log 12$ and $\log 5$. Tables are not necessary.

- (a) $\begin{matrix} 1.0791 \\ 0.6990 \end{matrix}$ (b) $\begin{matrix} 1.0791 \\ 1.6990 \end{matrix}$ (c) $\begin{matrix} 0.7781 \\ 0.6990 \end{matrix}$ (d) $\begin{matrix} 1.0791 \\ 0.7781 \end{matrix}$

2. If $\log_x 8 = 3 \log_9 3$, then $x =$

- (a) 2 (b) 4 (c) 6 (d) 9

3. $\frac{(x+h)^2 - (x-h)^2}{2h} =$

- (a) $x - h$ (b) $x + h$ (c) $2x$ (d) $2x + 2h$

4. If $2x^2 + 2x = -1$, a possible value of x is

- (a) $\frac{1-i}{2}$ (b) $\frac{-2+1}{4}$ (c) $\frac{-1+i}{2}$ (d) $\frac{2-i}{4}$

5. If $(x - 3y)^6$ is expanded by the binomial theorem, which term does not occur.

- (a) $45x^4y^2$ (b) $-540x^3y^3$ (c) $1215x^2y^4$ (d) $729y^6$

6. Determine the solution set of $|3x - 2| > 1$

- (a) $\frac{1}{3} > x > 1$ (b) $\frac{1}{3} < x < 1$ (c) $x > 1$ or $x < \frac{1}{3}$ (d) $x = 1, \frac{1}{3}$

7. If $f(x) = \frac{x^2}{x^2+1}$, then for $x \neq 0$, $f\left(\frac{1}{x}\right) =$

- (a) $\frac{x^2+1}{x^2}$ (b) $\frac{1}{x^2+1}$ (c) $1 + x^2$ (d) $1 + x^{-2}$

8. $\begin{vmatrix} 2 & -1 & 3 \\ 3 & -2 & 0 \\ 5 & 4 & 1 \end{vmatrix}$

- (a) 5 (b) -1 (c) 65 (d) 59

9. If θ is an acute angle such that $\cos \theta = \frac{1}{3}$, then $\cot \theta =$

- (a) 2 (b) $\frac{\sqrt{2}}{4}$ (c) $\sqrt{3}$ (d) $\frac{\sqrt{2}}{8}$

10. $\csc 210^\circ$

- (a) 2 (b) $-\frac{2}{3}\sqrt{3}$ (c) $\frac{2}{\sqrt{3}}$ (d) none of these

11. Find $\tan \frac{27\pi}{4}$

- (a) $-\sqrt{2}$ (b) 1 (c) $\frac{\sqrt{2}}{2}$ (d) -1

12. Which of the following is not true?

- (a) $\cos 2A = \cos^2 A - \sin^2 A$ (b) $\cos^2 \frac{A}{2} = \frac{1 + \cos A}{2}$
(c) $\tan^2 A + 1 = \sec^2 A$ (d) $\sin (A + B) = \sin A \cos B + \sin B \cos A$

13. $\frac{\cos^3 A}{\cot^2 A} =$

- (a) $\cos A \csc^2 A$ (b) $\cos A \sin^2 A$ (c) $\tan^2 A \sin A$ (d) none of these

14. Which of the following is the graph of $y = \cos(2x - \pi)$

