



Math Precalculus Test -Sample Questions

You have up to 90 minutes to complete 30 multiple choice questions
Calculators and dictionaries are NOT allowed.

Sample Questions

- $f(x) = 4x^2 - 7x$. Find $\frac{f(a+h) - f(a)}{h}$.
A) $8a + 2h$ B) $4a + 2h - 7$ C) $8a + 4h - 7$ D) $6a + 2h - 7$
- Which one of the following has a graph symmetric with respect to ~~the x~~ the y axis?
A) $y = 2|x|$ B) $x = 4y^2$ C) $xy = 3$ D) $(x-2)^2 + (y+1)^2 = 4$
- Find $(g \circ f)(x)$, if $f(x) = 9x^2$ and $g(x) = \frac{1}{3}x^3$.

$$\begin{matrix} 3 & 3 \\ 3 & 3 \end{matrix} \quad \text{B) } \begin{matrix} 3 & 3 \\ 3 & 3 \end{matrix}$$

- Find the distance between the points $P(-3, -5)$ and $Q(1, -3)$.
A) 12 B) 8 C) $4\sqrt{5}$ D) $2\sqrt{5}$
- Find the equation of the line containing the point $(6, -6)$ and parallel to the line $2y - x = 10$.
A) $y = -\frac{1}{2}x - 12$ B) $y = -2x - 6$
C) $y = -2x + 6$ D) $y = \frac{1}{2}x - 9$

9. Which line is perpendicular to $2x + 6y = 1$?

A) $y = -3x + 4$

B) $2x - 6y = 1$

C) $6x - 2y = 1$

D) $2x + 6y = -1$

10. Rationalize the denominator

- A) 2 B) 512 C) $\frac{1}{2}$ D) -2
19. Solve: $\log_x(\log_2 8) = 2$
 A) 3 B) $\frac{3}{2}$ C) $\sqrt{2}$ D) $\sqrt{3}$
20. Solve: $\log_4(x+6) - \log_4 x = 2$
 A) $\frac{2}{33}$ B) 2 C) $\frac{5}{2}$ D) $\frac{2}{5}$
21. Solve for t $27^{2t-1} = 8^{t+2}$
 A) 3 B) -3 C) $-\frac{1}{2}$ D) $\frac{11}{2}$
22. Solve the equation $\sqrt{x+6} + 7 = 9$.
 A) 2 B) -2 C) -6 D) 6
23. Solve the inequality $|3x - 9| < -3$.
 A) $\left(\frac{6}{13}, \frac{12}{13}\right)$ B) \emptyset C) $(-\infty, \infty)$ D) $\left(-\infty, \frac{6}{13}\right) \cup \left(\frac{12}{13}, \infty\right)$
24. Find the inverse of the function $f(x) = \sqrt[3]{x+4}$.
 A) $f^{-1}(x) = (x+4)^3$ B) $f^{-1}(x) = \sqrt[3]{x}-4$ C) $f^{-1}(x) = (x-4)^3$ D)

29. In which quadrant does θ lie if $\sin \theta < 0$ and $\cos \theta > 0$?

- A) I B) II C) III D) IV

30. Find the period of $y = -4 \sin\left(8x + \frac{\pi}{2}\right)$.

- A) 8 B) π C) 4 D) $\frac{\pi}{4}$

31. Find the exact value of $\cot(20^\circ)$. Do not use a calculator.

- A) $\sqrt{3}$ B) $\sqrt{3}/3$ C) $-\sqrt{3}/3$ D) $-\sqrt{3}$

32. Simplify $\sin \theta (\sec \theta \tan \theta + \csc \theta + \cot \theta)$.

- A) $\sin^2 \theta - 1 + \cos \theta$ B) $\sec^2 \theta + \cos \theta$ C) $\sin \theta + 2 \sec \theta$ D) $1 + 2 \sin^2 \theta$

33. The graph of $y = \sin x$ passes through the point $(\frac{\pi}{4}, \frac{\sqrt{2}}{2})$.