A.P. Calculus Mini Exam #1 Name _____

I. Multiple Choice

_____ 1. If f(x) = x – 2 and $g(x) = |x-2|$ Then g(f(-3)) =

(A) -7 (B) –3 (C) 3 (D) 7 (E) None of these

_____ 2. The graph of the equation $y = |x|$ exhibits which of the following symmetries? There may be more than one answer -- give all that apply.

(A) x-axis (B) y-axis (C) Origin

(D) $y = x$ (E) No symmetry

_____ 3. Let $f^{-1}(x)$ be the inverse function of $f(x) = x^3 + 2$. Then $f^{-1}(x)$ =

(A) $\frac{1}{x^3 - 2}$ (B) $(x+2)^3$ (C) $(x-2)^3$ (D) $\sqrt[3]{x+2}$ (E) $\sqrt[3]{x-2}$

_____ 4. The domain of $f(x) = \frac{\sqrt{x-2}}{x^2 - x}$ is

(A) all $x \neq 0,1$ (B) $x \leq 2, x \neq 0,1$ (C) $x \leq 2$

(D) $x \geq 2$ (E) $x > 2$

_____ 5. Determine the angle of inclination of $x - \sqrt{3}y = 2006$

(A) $-30°$ (B) $-60°$ (C) $30°$ (D) $60°$ (E) $150°$

_____ 6. The equation of all lines parallel to 3x + 5y = 8 is:

(A) 3x – 5y = k (D) 3x + 5y = k

(B) 5x – 3y = k (E) 5x + 3y = k

(C) $y = \frac{3}{5}x + k$

_____ 7. The range of $y = \sin^{-1} x$ is

(A) $0° \leq x \leq 180°$ (B) $-45° \leq x \leq 45°$

(C) $-90° \leq x \leq 90°$ (D) $90° \leq x \leq 270°$

_____ 8. Which of the following statements is true?

(A) $\log(A - B) = \log(A) - \log(B)$

(B) $\log(A - B) = \log\left(\frac{A}{B}\right)$

(C) $\log\left(\frac{A}{B}\right) = \frac{\log A}{\log B}$

(D) $\log\left(\frac{A}{B}\right) = \log(A) - \log(B)$

_____ 9. If a, b, and c represent the sides of a triangle, and h is the altitude to side b, $s = \frac{1}{2}(a+b+c)$, which of the following does ***not*** find the area of the triangle?

(A) $\frac{1}{2}bc\sin A$ (B) $\sqrt{a^2+b^2}$

(C) $\sqrt{s(s-a)(s-b)(s-c)}$ (D) $\frac{1}{2}bh$

_____ 10. Convert $40°$ to radians:

(A) $\frac{\pi}{45}$ (B) $\frac{\pi}{9}$ (C) $\frac{2\pi}{9}$ (D) $\frac{7200}{\pi}$

(E) None of the above

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II. Free Response (Show all work on your own paper)

11. Divide $6x^3 - 21x^2 - 16x + 16$ by x - 4 .

12. Rewrite the function $f(x) = |x-1| + 2$ in piecewise form without using absolute value symbols.

13. Transform the parametric equations to a Cartesian equation by eliminating the parameter.

x = 3 – t
y = 1 + 12t

14. Determine the *exact* value of $\sin\left(Tan^{-1}\left(\frac{2}{3}\right)+Sin^{-1}\left(\frac{1}{3}\right)\right)$

15. Determine the equation of a line that passes through (-2, 0) and (4, -3).

16. If $\cos\theta=\frac{2}{3}$ and $0<\theta<\frac{\pi}{2}$, Determine the value of $\sin(2\theta)$

17. If $\sin\theta=\frac{3}{5}$ and $\frac{\pi}{2}<\theta<\pi$, Determine the exact values of the remaining trigonometric functions of θ.

18. Graph the function y = sin(x) for one period.

19. Graph the following on the coordinate axes:

$|x|+|y|=3$

20. Graph $f(x)=\begin{cases}-x & \text{if } x<0\\ x-1 & \text{if } 0\le x\le 6\\ 3 & \text{if } x>6\end{cases}$

Extra Credit: Name the three items that Mr. P believes are important in achieving success in A.P. Calculus: _____

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