



*solve **ALL** the questions properly and show your steps

A

PART 1: Consists of ten questions – Each worth 2.5- points

- The value of $\sqrt[3]{\left(\frac{8}{3} + \frac{2}{9} + \frac{47}{27}\right)}$ =
 - 25/3
 - 125/27
 - 5/3
 - 5/9
- If the scores of five students are 15, 5, 20, 10 and 5. Then their sample mean (average) is
 - 55
 - 11
 - 20
 - 50
- Factor: $(27x^3 - 125y^3) =$
 - $(3x - 5y)(9x^2 + 25y^2)$
 - $(3x - 5y)(9x^2 - 15xy + 25y^2)$
 - $(3x - 5y)(9x^2 + 15xy + 25y^2)$
 - $(3x - 5y)(9x^2 - 30xy + 25y^2)$
- The solution of the inequality $\frac{2}{5}(5 - 2x) \leq \frac{4}{5} - \frac{1}{2}(1 + 2x)$ is
 - $x \geq 17/18$
 - $x \leq -17/2$
 - $x \geq -17/2$
 - $x \leq -21/2$
- The value of x that satisfies the equation $\sqrt{2x + 3(1 - x)} = 5$ is
 - $x = -28$
 - $x = -2$
 - $x = -22$
 - $x = -7$



6. The solution of $|x^2 + 4| = 16$ is
- a. Only $x = -2\sqrt{3}$
 - b. Only $x = 2\sqrt{3}$
 - c. $x = -2\sqrt{3}$ or $x = 2\sqrt{3}$
 - d. \mathfrak{R}
7. The determinant of the matrix $\begin{bmatrix} -2 & -5 \\ -3 & -8 \end{bmatrix}$ is
- a. 31
 - b. -1
 - c. -31
 - d. 1
8. The value of $|-2 - 3\pi| =$
- a. $-2 - 3\pi$
 - b. $2 + 3\pi$
 - c. 3π
 - d. 2
9. If $x - 5 = \sqrt{3y + 5}$ then $y =$
- a. $y = \frac{1}{3}((x - 5)^2 - 5)$
 - b. $y = \frac{1}{3}((x - 5)^2 + 5)$
 - c. $y = \frac{1}{3}(x - 5)^2$
 - d. $y = \sqrt{3x + 5} + 5$
10. The slope of the line that passes through the points $(-3, -2), (-5, 4)$ is
- a. -3
 - b. 3
 - c. $-1/3$
 - d. $1/3$



PART 2: Consists of ten questions – Each worth 2.5- points

- The solution of the system $\begin{cases} x = 3 - 2y \\ y = 3 - 3x \end{cases}$ is
 - $x = 6/5, y = 3/5$
 - $x = 3/5, y = 6/5$
 - $x = -3/5, y = 6/5$
 - $x = 3, y = 0$
- $\sin^2(x) =$ (Hint, use half angel formula)
 - $1 + \sin(2x)$
 - $\frac{1}{2}(1 - \cos(2x))$
 - $\frac{1}{2}(1 + \cos(2x))$
 - $1 - \sin(2x)$
- If $y = \sqrt[3]{x^2} + 1$, then its first derivative $\frac{dy}{dx}(x=1)$ is
 - $-2/3$
 - $2/3$
 - $-1/3$
 - $1/3$
- The angel between the vectors $\vec{A} = i + j - k, \vec{B} = -i - j + k$ is
 - 0
 - $\pi/4$
 - $\pi/2$
 - π
- Evaluate $\int x^5 dx$
 - 1
 - x^6
 - $x^6/6$
 - x^5
- If $\ln(x-1) = \ln(5-2x)$, then the value of x should be
 - $1/2$
 - 2
 - $4/3$
 - $x > 1$



7. The value of $\log_5(125) + \log_3(81)$
- 4
 - 5
 - 6
 - 7
8. Simplify: $(e^{2\ln(2)} + 1)^2 =$
- $e^{4\ln^2(2)} + 1$
 - $e^{4\ln(4)} + 1$
 - 5
 - 25
9. If $y = \tan(\sqrt{x})$, then $\frac{dy}{dx} =$
- $\frac{1}{2\sqrt{x}} \csc^2(\sqrt{x})$
 - $\frac{1}{2\sqrt{x}} \sec^2(\sqrt{x})$
 - $\frac{-1}{2\sqrt{x}} \sec^2(\sqrt{x})$
 - $\frac{-1}{2\sqrt{x}} \csc^2(\sqrt{x})$
10. Simplify: $\ln\left(\frac{x^3 y^2}{\sqrt{x+y}}\right) =$
- $3\ln(x) + 2\ln(y)$
 - $3\ln(x) + 2\ln(y) - \frac{1}{2}\ln(x) - \frac{1}{2}\ln(y)$
 - $3\ln(x) + 2\ln(y) - \frac{1}{2}\ln(x+y)$
 - $3\ln(x) - 2\ln(y) + \frac{1}{2}\ln(x+y)$

Good Luck