



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

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

1. The value of $\left(2 - \frac{1}{3} + \frac{1}{4}\right)^{-1} =$
 - a. 12/23
 - b. 23/12
 - c. 17/12
 - d. 12/17
2. If the scores of five students are all twenty. Then their sample mean and sample variance are
 - a. 20 and 20
 - b. 10 and 20
 - c. 20 and 10
 - d. 20 and zero
3. Using difference of squares $(x^2 - y^2) =$
 - a. $(x - y)^2$
 - b. $2(x + y)(x - y)$
 - c. $(x + y)(x - y)$
 - d. $2(x - y)$
4. The solution set of the inequality $2(-3x - 5) \leq 3 - 2(7 + 2x)$ is
 - a. $x \leq 1/2$
 - b. $x \geq 1/2$
 - c. $x \geq 1/10$
 - d. $x \geq 21/10$
5. The solution set of $\frac{x+1}{x+3} - \frac{2}{x} = 0$ is
 - a. $\{-2, 3\}$
 - b. $\{-2, -3\}$
 - c. $\{2, -3\}$
 - d. $\{2, 3\}$



6. The solution set of $\sqrt{x^2+1} = -2$ is
- a. $\{-\sqrt{3}\}$
 - b. $\{\sqrt{3}\}$
 - c. $\{-\sqrt{3}, \sqrt{3}\}$
 - d. Φ
7. The determinant of the matrix $\begin{bmatrix} -1 & 4 \\ -3 & 8 \end{bmatrix}$ is
- a. -20
 - b. -4
 - c. 20
 - d. 4
8. The value of $|(-2\pi)^2| =$
- a. $4\pi^2$
 - b. $-4\pi^2$
 - c. $2\pi^2$
 - d. 4
9. If $y = \frac{a}{b+x}$ then $x =$
- a. $x = a/y$
 - b. $x = a/y - b$
 - c. $x = a - by$
 - d. $x = a/(b+y)$
10. The slope of the line $2x+3y=6$ is
- a. $-2/3$
 - b. $2/3$
 - c. $-1/2$
 - d. $1/2$



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

1. The solution of the system $\begin{cases} x = 1 - 2y \\ y = 3x - 3 \end{cases}$ is
 - a. $x = 0, y = 1$
 - b. $x = 1, y = 0$
 - c. $x = 1, y = 2$
 - d. \mathcal{R}
2. The value of $\sin\left(\frac{\pi}{2}\right) + \cos(\pi) =$
 - a. 0
 - b. 1
 - c. -1
 - d. 2
3. If $y = (x^2 + 4)$, then $\frac{dy}{dx}(x = 1)$ is
 - a. 0
 - b. 2
 - c. 5
 - d. 6
4. The dot product between the vectors $\vec{A} = 2i - j + 3k$, $\vec{B} = -i + 2j - 3k$ is
 - a. -13
 - b. -10
 - c. -9
 - d. -5
5. Evaluate $\int_0^1 x \, dx =$
 - a. 0
 - b. -1/2
 - c. 1/2
 - d. 1
6. If A and B are independent events then $P(A \cap B) =$
 - a. 0
 - b. $P(A)$
 - c. $P(B)$
 - d. $P(A)P(B)$



7. $\log_3(9) + \log_5(5)$
- a. 1
 - b. 2
 - c. 3
 - d. 4
8. Simplify: $\left(\frac{1}{x} - \frac{1}{y}\right)^{-2} (x-y)^2 =$
- a. x^2y^2
 - b. $-x^2y^2$
 - c. $x^2y^2(x-y)^2$
 - d. $x^2y^2(x-y)^4$
9. If $y = \sin^2(x)$, then $\frac{dy}{dx}\left(\frac{\pi}{3}\right) =$
- a. $-1/2$
 - b. $-\sqrt{3}/2$
 - c. $1/2$
 - d. $\sqrt{3}/2$
10. The solution set of $2x^2 - x - 1 = 0$ is
- a. $\{1/2, 1\}$
 - b. $\{-1/2, 1\}$
 - c. $\{1/4, -3/4\}$
 - d. $\{1/4, 3/4\}$

Good Luck