Marking Guide – Mathematics B (2024/2025)

# Section A Answers [55 Marks]

1. 1) Correct use of Pythagoras theorem:

Answer: d) X² + 8² = 10²

1. 2) Simplify (4x²)(16x):

Answer: a) 64x³

1. 3) Sum of probabilities of all outcomes:

Answer: a) Must always equal to 1

1. 4) Regression line y on x where x̄ = -10, ȳ = -4, slope = 0.6:

Answer: b) y = 0.6x - 2

1. 5) Imaginary part of 4 + 2i:

Answer: a) 2

1. 6) Solve log₄64 = 2log₄x:

Answer: c) x = ±8

1. 7) Value of definite integral from -1 to 1 of an odd function:

Answer: a) Its value is equal to 0

1. 8) Solve system using inverse matrix method:  
   2x + 3y = 7  
   3x + 4y = 10

Answer: b) x = 2, y = 1

1. 9) Solve x² - 3x + 2 = 0

Answer: c) {1, 2}

1. 10) Find a, b, c from values of f(x):

Answer: a) a = -4, b = -1, c = 3

1. 11) Tangent to y = x² - 4x + 1 at x = 0:

Answer: b) y = -4x + 1

1. 12) Solve x² = 2x + 5:

Answer: a) x = 5

1. 13) Solve 3x² + 2x - 27 = 0:

Answer: a) {1}

1. 14) Domain of f(x) = ln(x + 1):

Answer: d) x ∈ (−1, +∞)

1. 15) Derivative of f(x) = (2x² + 5x)/(4x − 2):

Answer: Use quotient rule

# Section B Summary Answers [45 Marks]

1. 16) Analysis of function f(x) = (x² - 4)/(x - 1):

- Domain: x ≠ 1  
- Even/Odd: Neither  
- Asymptote: Vertical at x=1  
- Derivatives: Use quotient rule  
- Graph: Rational function sketch

1. 17) Integration and Area:

- a) Integrate polynomial from 1 to 2  
- b) Find area between y = 2x - x² and y = x² (sketch then subtract integrals)

1. 18) Probability of seed germinating:

- a) P(germinate) = (2/3)(0.8) + (1/3)(0.5) = 0.7  
- b) Use Bayes’ Theorem to find P(treated | germinated)

1. 19) Regression and Correlation:

- a) Scatter plot of (x, y)  
- b) Mean x̄ and ȳ  
- c) Variance of x and y, covariance  
- d) Regression line y = a + bx  
- e) Correlation coefficient r

1. 20) Evaluate: tan²θ + cot²θ given sinθ = 3/5 and cosθ = 4/5

- tanθ = 3/4, cotθ = 4/3 → tan² + cot² = (9/16) + (16/9) = (81 + 256)/144 = 337/144