

Full Step-by-Step Solutions - Applied Mathematics B (Predicted Exam)

SECTION A - Step-by-Step Solutions

Q1: $5x - 3 \leq 2x + 9$

$$5x - 2x \leq 9 + 3 \rightarrow 3x \leq 12 \rightarrow x \leq 4$$

Q2: $(2x - 1)/3 = (x + 5)/2$

Cross multiply: $2(2x - 1) = 3(x + 5) \rightarrow 4x - 2 = 3x + 15 \rightarrow x = 17$

Q5 Integration:

$$\int (3x^2 - 4x + 1) dx = x^3 - 2x^2 + x + C$$

Q6: 120° to radians

$$120 \times \pi/180 = 2\pi/3 \approx 2.094$$

SECTION B - Step-by-Step Solutions

Q16: $y = x(6-x)$

$y = 6x - x^2$ (parabola)

Area = $\int_{0}^{6} (6x - x^2) dx$

$= [3x^2 - x^3/3]_{0}^{6} = 108 - 72 = 36$

Q17: $f(x) = (x^2 + 1)/(x - 2)$

Domain: $x \neq 2$

Divide: $f(x) = x + 2 + 5/(x - 2)$

Asymptotes: $x = 2$, $y = x + 2$

Q18 Outcomes:

3 foods \times 2 drinks = 6 outcomes

Q20 Complex:

$z = 2 + 2i \rightarrow r = \sqrt{8}$, $\theta = 45^\circ$