UNIT 2 MATHEMATICAL METHODS
FORMULA SHEET

Mensuration

Area of a triangle: $\frac{1}{2}bc\sin A$

Area of a trapezium: $\frac{1}{2}(a+b)h$

Curved surface area of a cylinder: $2\pi rh$

Volume of a cone: $\frac{1}{3}\pi r^2 h$

Volume of a cylinder: $\pi r^2 h$

Volume of a pyramid: $\frac{1}{3}Ah$

Volume of a sphere: $\frac{4}{3}\pi r^3$

Coordinate Geometry

$d(AB) = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

Midpoint of a line joining (x_1, y_1) and (x_2, y_2): $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$

Calculus

Average rate of change between (x_1, y_1) and (x_2, y_2): $m = \frac{y_2 - y_1}{x_2 - x_1}$

$\frac{d}{dx}\left(x^n\right) = nx^{n-1}$ $\qquad$ $\int x^n dx = \frac{1}{n+1}x^{n+1} + c,\ n \neq -1$

Chain Rule: $\frac{dy}{dx} = \frac{dy}{du} \times \frac{du}{dx}$ $\qquad$ Product Rule: $\frac{d}{dx}(uv) = u\frac{dv}{dx} + v\frac{du}{dx}$

Quotient Rule: $\frac{d}{dx}\left(\frac{u}{v}\right) = \frac{v\frac{du}{dx} - u\frac{dv}{dx}}{v^2}$

Probability

$\Pr(A) = 1 - \Pr(A')$

$\Pr(A \cup B) = \Pr(A) + \Pr(B) - \Pr(A \cap B)$

$\Pr(A \mid B) = \frac{\Pr(A \cap B)}{\Pr(B)}$

Transition matrices: $S_n = T^n \times S_0$

END OF FORMULA SHEET