

SPM Additional Mathematics Formula List for Paper 1

ALGEBRA

$$1 \quad x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$2 \quad a^m \times a^n = a^{m+n}$$

$$3 \quad a^m \div a^n = a^{m-n}$$

$$4 \quad (a^m)^n = a^{mn}$$

$$5 \quad \log_a mn = \log_a m + \log_a n$$

$$6 \quad \log_a \frac{m}{n} = \log_a m - \log_a n$$

$$7 \quad \log_a m^n = n \log_a m$$

$$8 \quad \log_a b = \frac{\log_c b}{\log_c a}$$

$$9 \quad T_n = a + (n-1)d$$

$$10 \quad S_n = \frac{n}{2}[2a + (n-1)d]$$

$$11 \quad T_n = ar^{n-1}$$

$$12 \quad S_n = \frac{a(r^n - 1)}{r - 1} = \frac{a(1 - r^n)}{1 - r}, r \neq 1$$

$$13 \quad S_\infty = \frac{a}{1 - r}, |r| < 1$$

CALCULUS (KALKULUS)

$$1 \quad y = uv, \quad \frac{dy}{dx} = u \frac{dv}{dx} + v \frac{du}{dx}$$

$$2 \quad y = \frac{u}{v}, \quad \frac{dy}{dx} = \frac{v \frac{du}{dx} - u \frac{dv}{dx}}{v^2}$$

$$3 \quad \frac{dy}{dx} = \frac{dy}{du} \times \frac{du}{dx}$$

$$4 \quad \text{Area under a curve} \\ \text{(Luas di bawah lengkung)} \\ = \int_a^b y \, dx \quad \text{or (atau)}$$

$$= \int_a^b x \, dy$$

$$5 \quad \text{Volume generated (Isipadu janaan)} \\ = \int_a^b \pi y^2 \, dx \quad \text{or (atau)} \\ = \int_a^b \pi x^2 \, dy$$

TRIGONOMETRY (TRIGONOMETRI)

$$1 \quad \text{Arc length, } s = r\theta \\ \text{Panjang lengkok, } s = j\theta$$

$$2 \quad \text{Area of sector, } A = \frac{1}{2}r^2\theta \\ \text{Luas sektor, } L = \frac{1}{2}j^2\theta$$

$$3 \quad \frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$4 \quad a^2 = b^2 + c^2 - 2bc \cos A \\ a^2 = b^2 + c^2 - 2bc \cos A$$

$$5 \quad \text{Area of triangle (Luas segitiga)} \\ = \frac{1}{2}ab \sin C$$

STATISTICS (STATISTIK)

$$1 \quad \bar{x} = \frac{\Sigma x}{N}$$

$$2 \quad \bar{x} = \frac{\Sigma fx}{\Sigma f}$$

$$3 \quad \sigma = \sqrt{\frac{\Sigma(x - \bar{x})^2}{N}} = \sqrt{\frac{\Sigma x^2}{N} - \bar{x}^2}$$

$$4 \quad \sigma = \sqrt{\frac{\Sigma f(x - \bar{x})^2}{\Sigma f}} = \sqrt{\frac{\Sigma fx^2}{\Sigma f} - \bar{x}^2}$$

$$5 \quad m = L + \left(\frac{\frac{1}{2}N - F}{f_m} \right) C$$

$$6 \quad I = \frac{Q_1}{Q_2} \times 100$$

$$7 \quad \bar{I} = \frac{\Sigma W_i I_i}{\Sigma W_i}$$

GEOMETRY (GEOMETRI)

$$1 \quad \text{Distance (Jarak)}$$

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

$$2 \quad \text{Mid-point (Titik tengah)}$$

$$(x, y) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$3 \quad \text{A point dividing a segment of a line}$$

(Titik yang membahagi suatu tembereng garis)

$$(x, y) = \left(\frac{nx_1 + mx_2}{m + n}, \frac{ny_1 + my_2}{m + n} \right)$$

$$4 \quad \text{Area of triangle (Luas segitiga)}$$

$$= \frac{1}{2} \left| (x_1 y_2 + x_2 y_3 + x_3 y_1) - (x_2 y_1 + x_3 y_2 + x_1 y_3) \right|$$