

L2-MATHF



2

**NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA**



**National Certificate of Educational Achievement
TAUMATA MĀTAURANGA Ā-MOTU KUA TAEA**

Level 2 Mathematics, 2006

90284, 90285, 90286, 90287, 90290 and 90292

FORMULAE SHEET

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YOU MAY KEEP THIS SHEET AT THE END OF THE EXAMINATION.

Quadratics

$$\text{If } ax^2 + bx + c = 0$$

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

$$\text{and } \Delta = b^2 - 4ac$$

Logarithms

$$\text{If } y = b^x \text{ then } x = \log_b y$$

$$\log_b(xy) = \log_b x + \log_b y$$

$$\log_b\left(\frac{x}{y}\right) = \log_b x - \log_b y$$

$$\log_b(x^n) = n \log_b x$$

$$\text{If } y = e^x \text{ then } x = \log_e y (= \ln y)$$

Sequences / Series

$$t_n = a + (n-1)d$$

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

$$t_n = ar^{n-1}$$

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

$$S_\infty = \frac{a}{1-r} \text{ for } |r| < 1$$

Calculus

$$\frac{d}{dx}(x^n) = nx^{n-1}$$

$$\int x^n dx = \frac{x^{n+1}}{n+1} + c$$

Coordinate Geometry

$$y - y_1 = m(x - x_1)$$

Statistics

$$s = \sqrt{\frac{\sum(x - \bar{x})^2}{n}}$$

Probability

$$Z = \frac{X - \mu}{\sigma}$$

Trigonometry

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

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

$$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$$

$$\text{Area of triangle} = \frac{1}{2}bc \sin A$$

$$\text{Arc length} = r\theta$$

$$\text{Area of sector} = \frac{1}{2}r^2\theta$$

$$\text{Area of segment} = \frac{1}{2}r^2(\theta - \sin\theta)$$