

MATH1040 — Basic Mathematics
Final Examination, Semester 1, 2011

Formulae Sheet:

Distance between (x_1, y_1) and (x_2, y_2) : $d = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$

Roots of $ax^2 + bx + c = 0$ are: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Product rule: $(uv)' = u' \cdot v + u \cdot v'$

Chain rule: $\frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx}$

Quotient rule: $\left(\frac{u}{v}\right)' = \frac{u' \cdot v - u \cdot v'}{v^2}$

Compounding interest: if \$P is invested for t time periods at an interest rate of r per period then the final balance, F , is given by:

$$F = P(1 + r)^t.$$

Continuously compounding interest: if \$P is invested for t years at an interest rate of r per annum, compounding continuously, then the final balance, F , is given by:

$$F = Pe^{rt}.$$

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

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