MATH1050 — MATHEMATICAL FOUNDATIONS
First Semester Examination, 2008 (continued)

Reference Page

$$\sin(\theta+\phi) = \sin\theta\cos\phi + \cos\theta\sin\phi$$

$$\sin(\theta-\phi) = \sin\theta\cos\phi - \cos\theta\sin\phi$$

$$\cos(\theta+\phi) = \cos\theta\cos\phi - \sin\theta\sin\phi$$

$$\cos(\theta-\phi) = \cos\theta\cos\phi + \sin\theta\sin\phi$$

$$\cos 2\theta = \cos^2\theta - \sin^2\theta = 2\cos^2\theta - 1 = 1 - 2\sin^2\theta$$

$$\sin 2\theta = 2\sin\theta\cos\theta$$

For an arithmetic sequence of the form $\{a_j\}_{j=1}^n$, where $a_j = a + (j-1)d$,

$$S_n = \sum_{i=1}^{n} a_i = \frac{n}{2}(2a + (n-1)d)$$

For a geometric sequence of the form $\{a_j\}_{j=1}^n$, where $a_j = ar^{j-1}$,

$$S_n = \sum_{i=1}^{n} a_i = \frac{a(1-r^n)}{1-r} = \frac{a(r^n-1)}{r-1}$$