MA005 Final Exam – Formula Sheet

$$\int \frac{du}{\sqrt{1-u^2}} = \sin^{-1}(u) + C \qquad\qquad \int \frac{-du}{1+u^2} = \cot^{-1}(u) + C$$

$$\int \frac{-du}{\sqrt{1-u^2}} = \cos^{-1}(u) + C \qquad\qquad \int \frac{du}{|u|\sqrt{u^2-1}} = \sec^{-1}(u) + C$$

$$\int \frac{du}{1+u^2} = \tan^{-1}(u) + C \qquad\qquad \int \frac{du}{|u|\sqrt{u^2-1}} = \sec^{-1}(u) + C$$

$$\sum_{k=1}^{n} k = 1 + 2 + \cdots + n = \frac{n(n+1)}{2}$$

$$\sum_{k=1}^{n} k^2 = 1^2 + 2^2 + \cdots + n^2 = \frac{n(n+1)(2n+1)}{6}$$

$$\sum_{k=1}^{n} k^3 = 1^3 + 2^3 + \cdots + n^3 = \left[\frac{n(n+1)}{2}\right]^2$$

Volume

Sphere:	$V = \frac{4}{3}\pi r^3$
Cylinder:	$V = \pi r^2 h$
Cone:	$V = \frac{1}{3}\pi r^2 h$
Prism with parallel bases:	$V = Bh$

Area

Sphere (surface):	$A = 4\pi r^2$
Cylinder (surface):	$A = 2(\pi r^2) + 2\pi rh$
Cone (surface):	$A = \pi r^2 + 2\pi rl$
Rectangle:	$A = bh$