MATHEMATICS 31
Formula Sheet

APPLICATIONS OF DERIVATIVES

Cost function = fixed costs + variable costs

$$C(x) = F + xp(x)$$

Average cost: $c(x) = \frac{C(x)}{x}$

Revenue = selling price per unit • number of units

$$R(x) = p(x) \cdot x$$

Profit = Revenue − Costs

$$P(x) = R(x) - C(x)$$

Cosine Law: $a^2 = b^2 + c^2 - 2bc\cos\theta$

circle: $C = 2\pi r$ $A = \pi r^2$

trapezoid: $A = \frac{1}{2}h(a+b)$

SOLIDS	SURFACE AREA	VOLUME
Sphere	$SA = 4\pi r^2$	$V = \frac{4}{3}\pi r^3$
Cube	$SA = 6s^2$	$V = s^3$
Rectangular solid with square base	$SA = 2x^2 + 4xy$	$V = x^2 y$
Right-circle cylinder	$SA = 2\pi r^2 + 2\pi rh$	$V = \pi r^2 h$
Right-circle cone	lateral area: $A = \pi rs$ total area: $SA = \pi r^2 + \pi rs$ (s = slant height)	$V = \frac{1}{3}\pi r^2 h$
Trapezoidal solid		$V = \frac{1}{2}h(a+b) \cdot l$ (l = length of prism)