PREPARATORY PRELIMINARY MATHEMATICS
WORKSHEET #1

COURSE/LEVEL
NSW Secondary High School Year 11 Preliminary Mathematics.

1. Give an equation for the straight line which is parallel to the *y*–axis and passes through the point (2, –3).

2. Calculate the volume of a cylinder of base radius 5 metres and height 3 metres. (Leave your answer in exact form.)

3. Make *y* the subject of the formula: $\frac{1-y}{y} = x$.

4. Simplify: $\frac{\left(1.3\times10^{-3}\right)^2}{6.5\times10^{-7}}$

5. Simplify $(81)^{-\frac{3}{4}}$

6. Simplify $\sqrt{\frac{3x^{-3}}{y} \div \frac{27x}{4y^3}}$

7. Find the *x*–intercepts of the graph with equation $y = x^2 + 7x - 8$.

8. If tan θ = 0.9916, find angle θ correct to the nearest minute.

9. Expand and simplify: $\left(2\sqrt{2} - \sqrt{5}\right)^2$.

10. Solve for *y*: $60 - (2y+1)^2 = 24$.

11. The shaded region is an annulus, formed by a small circle of radius *k* and a large circle of radius 2*k*. The circles forming the annulus both have the same centre *O*.

(a) Find the area of the annulus in terms of *k*.

(b) *X* and *Z* are points which lie on the circumference of the larger circle. *OY* is a radius of the smaller circle and point *Y* is the midpoint of *XZ*. Another circle, shown as a dotted line, has *XZ* as its diameter. Show that this circle has the same area as the annulus.