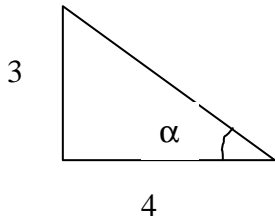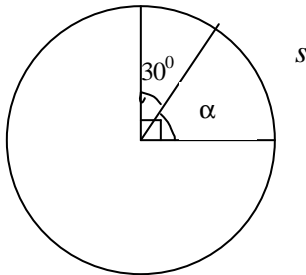**ASTRONOMY 020**
Problem Set #1 – Math Concepts
Due: September 12, 2003

1. What is the sum of the interior angles in a triangle?

2. Evaluate sin α, cos α, and tan α, where α is the interior angle on the lower right.

3. Find the length of the arc s opposite the angle α. The circle has unit radius.

4. If $m = 5 \log x$, $n = 5 \log y$, and $m - n = 10$, find the ratio x/y.

5. Find df/dr, if $f = k/r$, where k is a constant.

6. Find df/dr, if $f = k \ln r$, where k is a constant.

7. Evaluate the definite integral of $f = k/r^2$, over the interval [1,2], where k is a constant.

8. Identify the number of significant figures in each number: (a) 3.0900, (b) 0.00218, (c) 3.14 x 10^{-4}, (d) 31,400, (e) 0.02004, (f) 0.00500, (g) 200, (h) 2.00 x 10^2.

9. Write the answer in the correct number of significant digits: $\dfrac{(9.55 - 9.05)}{(7.21)(2.33)} = ?$