Problem set 1

- Uncertainty and Significant Figures

Express each approximation of π to six significant figures:

a) $\frac{22}{7}$,
b) $\frac{355}{113}$,
c) Are these approximations accurate to that precision?

- Vector Algebra

1. *See your textbook page 98, problem 48.*
2. You are camping with Joy and Hannah. Since all three of you like your privacy, you don't pitch your tents close together. Joy's tent is 21.0 m from yours, in the direction 23.0° south of east. Hannah's tent is 32.0 m from yours, in the direction 37.0° north of east. What is the distance between Joy's tent and Hannah's tent?

- Data and Units Conversion

You are a team leader at a pharmaceutical company. Several technicians are preparing samples, and you want to compare the densities of the samples (density = mass/volume) by using the mass and volume values they have reported. Unfortunately, you did not specify what units to use. The technicians used a variety of units in reporting their values, as shown in the following table.

Sample ID	Mass	Volume
A	8.00 g	1.67×10^{-6} m^3
B	6.00 µg	9.38×10^{6} μm^3
C	8.00 mg	2.50×10^{-3} cm^3
D	9.00×10^{-4} kg	2.81×10^{3} mm^3
E	9.00×10^{4} ng	1.41×10^{-2} mm^3
F	6.00×10^{-2} mg	1.25×10^{8} μm^3

List the sample IDs in order of increasing density of the sample. Show your work.