NTSC 395
SUPPLEMENTARY PROBLEM

A number of students have asked me to post some problems for practice. I will post solutions in a day or two. Please don't hesitate to ask any questions. Have fun!

1. Make data tables and graph the following functions :

    a) $y = x^2 - 3$

    b) $y = 2x^3 - x^2 + 3$

    c) $y = \sqrt{x^2 - 5}$

       (are there any values of x for which y is not defined?, in other words, what is the range of y?)

    d) $y = e^{-2x}$ (use your calculator to find the values of y)

    e) $y = e^x$ (again, use your calculator and plot between $-3 < x < 3$)

2. Calculate the distance traveled by an object in the following cases :

    a) An object starting from rest and accelerating at the rate of $2\,\text{m}/\text{s}^2$ for 5 seconds.

    b) An object dropped from rest falling for a time of 3 s.

    c) An object traveling at an initial constant speed of $5\,\text{m}/\text{s}$ being subjected to

       a force that accelerates it at the rate of $3\,\text{m}/\text{s}^2$. If the force is exerted at $t = 0$ s,

    how far will the object have traveled when $t = 3$ s.

3. Suppose an object is traveling at a speed of 20 m/s/s and is acted upon by a retarding force that causes it to accelerate at the rate of - 4 m/s. How long will it take the object to come to rest?

4. A converging lens has a focal length of 20 cm. If an object is placed 30 cm from the lens, where will the image be formed? If an object is placed 20 cm from the same lens, where will the image be formed. If an object is placed 10 cm from the same lens, where will the image be formed (review the sign conventions for a converging lens)