ESP 1206 Problem Set 11 - 2/23/99

For parts I - III: Sketch the graphs of each of the following equations and find all points of intersection - without graphing calculators.

I. Set up integral(s) to find the area of the region bounded by the graphs by integrating with respect to x.
   a. \( y = 7 - 2x^2, y = x^2 + 4 \)
   b. \( y = x^4, y = 8x \)
   c. \( y = \sqrt{x + 2}, y = x, \) and the x-axis (\( y = 0 \))
   d. \( y = x^2 - 4x + 3, y = x - 1 \)

II. Set up the integral(s) needed to find the area of the region bounded by the graphs by integrating with respect to y.
   a. \( x = y^2, x = 4 - y^2 \)
   b. \( x = 2 - y - y^2, x = y + 2 \)
   c. \( y = \sqrt{x + 2}, y = x, \) and the x-axis (\( y = 0 \))
III. R is the region bounded by the graphs of \( y = \sqrt{x} \), \( x - 4y = 5 \), and the x-axis. Set up the integral(s) needed to find the area of R
   a. integrating with respect to x
   b. integrating with respect to y.

III. A 30 pound child and her 200 pound father are balancing on a long seesaw. If the father is 4 feet to the right of the fulcrum as seen by an observer, how far to the left of the fulcrum is the child?

IV. A four pound weight is placed at one end of a long board of length 12 feet and a 7 pound weight is placed at the other end. If a seesaw type device is to be made, where should the fulcrum be placed so that the seesaw will balance without moving the objects?