Worksheet 8, October 21

1. Identify the inflection points and local maxima and minima of the functions. Identify the intervals on which the functions are concave up and down. (Graphs are in the text.)
   a. (§4.4#4) \( y = \frac{9}{14} x^{1/3} (x^2 - 7) \)
   
   b. (§4.4#8) \( y = 2 \cos x - \sqrt{2} x, -\pi \leq x \leq \frac{3\pi}{2} \)

2. Follow the graphing procedure from class to graph the equations. Include coordinates of any local extreme points an inflection points.
   a. (§4.4#14) \( 7 = 1 - 9x - 6x^2 - x^3 \)
   
   b. (§4.4#31) \( y = x^{2/3} (\frac{5}{2} - x) \)
3. (§4.5#4) A rectangle has its base on the $x$-axis and its upper two vertices on the parabola $y = 12 - x^2$. What is the largest area the rectangle can have, and what are its dimensions?

4. Find the most general anti-derivative, or indefinite integral:
   a. $\int (3t^2 + \frac{t}{2}) dt$
   b. $\int (\frac{\sqrt{x}}{2} + \frac{2}{\sqrt{x}}) dx$
   c. $\int (3 \cos 5t) dt$
   d. $\int \frac{5}{2} \sec \theta \tan \theta d\theta$