Assignment #11
 Math 180
 Ivame.

 1.
 Determine interval(s) where the function is increasing/decreasing/ concave up / concave down.

 1
 1
 2
 4
 4
 4

a) 
$$f(x) = x^4 - \frac{1}{3}x^3 - 18x^2 + 9x + 2 \text{ for } -4 \le x \le 4$$

b) 
$$f(x) = \csc x - 2\sin x \quad for \ 0 < x < \pi$$

2. Analyze the graph of the following functions:

a) 
$$f(x) = x^{5/3} - 5x^{2/3}$$

b) 
$$f(x) = \frac{\sin x}{2 + \cos x}$$

3. a) Find the volume of the largest right circular cone that can be inscribed in a sphere of radius 7cm.

b) A piece of wire 10 m long is cut into two pieces. One piece is bent into a square and the other is bent into an equilateral triangle. How should the wire be cut so that the total area enclosed is (a) maximum? (b) a minimum?

c) When a theater owner charges \$13 for admission there is an average attendance of 500 people. For every \$2.0 increase in admission, there is a loss of 40 customers from the average. What admission should be charged to maximize revenue?

d) A man is in a boat 5 miles off a straight coast. He wants to reach a point 12 miles down the coast in the least possible time. If he can row 4mph and run 5mph, where should he land the boat?