TEST 4:

HW:

The Final Grade for TEST 4:

I. (40%) Let

$$f(x) = 2x^3 - 15x^2 + 36x + 1.$$

(a) Find the critical points and the intervals of increase or decrease of $f(x)$.
(b) Find the local maximum and minimum values of f(x).
(c) Find the intervals of concavity and inflection points.
(d) Use the information from parts (a)-(d) to sketch the graph.

II. (8%) Find the limit:

$$\lim_{x \to 0} \frac{\cos x - 1}{x^2}$$

III. (8%) Find the most general antiderivative of the function:

$$f(x) = 2x + \frac{1}{\sqrt{1 - x^2}}$$

IV. (8%)

V. (8%)The graph of f is shown. Evaluate the integral

$$\int_{-4}^{4} f(x)dx$$

interpreting it in terms of areas.

VI. (8%) If

$$\int_{-1}^{5} f(x)dx = 6,$$

$$\int_{-1}^{2} f(x)dx = 4,$$

find

$$\int_{2}^{5} f(x)dx.$$

VII. (10%) Evaluate the integral

$$\int_0^2 (1 + 3x - x^2)dx.$$

VIII. (10%) Evaluate the integral

$$\int_0^{\pi/2} (2e^x + 4\cos x)dx.$$