MATH 220, Exam 3

Name:_____ Date: 07/20/15

You have the entire class time. This test has only 100pts possible, but there are 110pts available for credit. Your score will be determined by adding up all of the points you've earned and dividing it by 100. However, if that score exceeds 100% it will be rounded down to 100%.

If you don't understand a question, ask me about it.
Good luck!

1. (20pts) Compute the following.
(a)Find $\int(3x^2 + 2x^{3/2} + 1)dx$

(b)Find $\int(2x + 1)^2 dx$

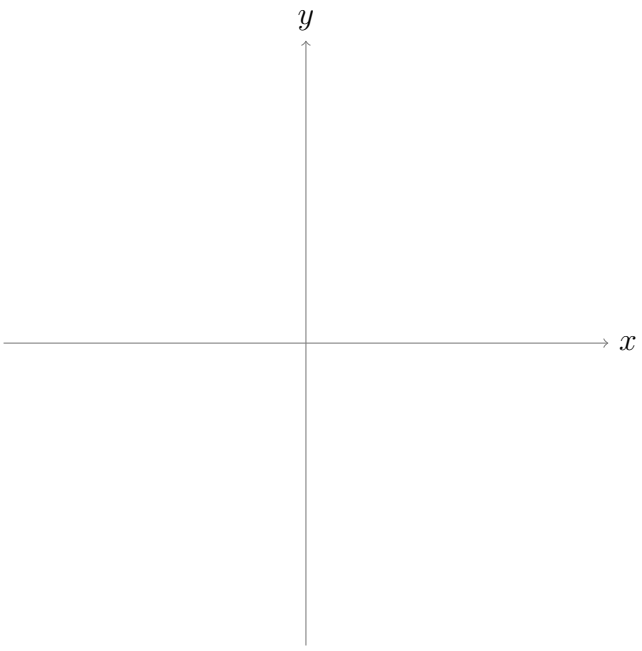
(c)Find $\int(\sin(3x + 1) + 6\cos(2x + 2))dx$

(d)Find $\int(e^{2x+1} + 2x^{-1})dx$

2. (10pts) A 3 meter ladder is leaning against a wall. Its base starts 1 meter away from the wall. The ladder then begins to fall. The top of the ladder is sliding down the wall at .1m/s. How fast is the base of the ladder sliding when the base is 2 meters away from the wall?

3. (20 pts) Fill in the blanks in order to graph $f(x) = x^3 - 12x + 5$. Write DNE if it doesn't exist.

Critical Points:_____ Inflection Points:_____
Local Minimum:_____ Local Maximum:_____
Absolute Minimum:_____ Absolute Maximum:_____



4. (15 pts) You're designing a garden. The east and west sides of the garden cost \$12/ft to build. The south side of the garden costs \$10/ft to build. The north portion of the garden is against your home. The garden needs to have 24 ft^2 of area enclosed. What are the dimensions of the cheapest garden?

   East/West Fence Length:_____ft
   South Fence Length:_____ft

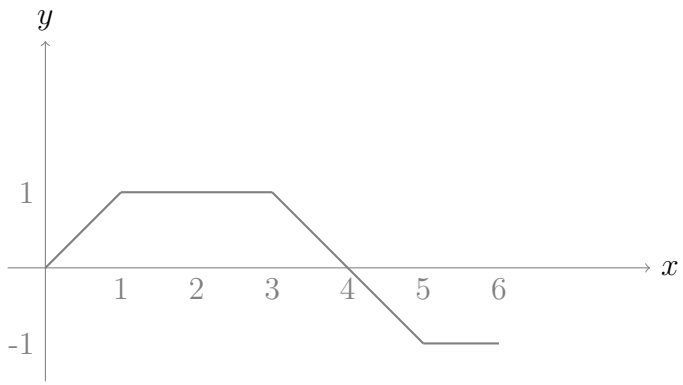
5. (10pts) For the function $f(x) = 3x - 1$.
   (a) Compute R_3 over [0,6].

   (b) Compute L_3 over [0,6].

6. (10pts) Compute the following.
   (a) $\sum_{j=0}^{5}(-1)^j$.

   (b) $\sum_{j=4}^{6} 4j + 4$.

7. (15pts) Use the graph of $f(x)$ to answer the following questions.



(a) Compute $\int_0^6 f(x)dx$

(b) Compute $\int_1^4 f(x)dx$

(c) Compute $\int_6^0 f(x)dx$

8. (10pts) **Using the limit definition of the definite integral**, compute $\int_{-1}^{5}(3x+1)dx$.