Test 1 Summer II, 2011 Name:_____
MAT 162 Gurganus

Directions: Show all work for partial credit purposes. You may use a graphing calculator and notes recorded on one side of a single 8.5 by 11 inch paper. Otherwise the test is closed book.

For 1-4, calculate the following:

1. $\int x \sin(1-x\ )dx$ (Hint: Make a substitution, then integrate by parts)

2. $\int \cos^3(x)\sin^{-5}(x)dx$

3. $\int \frac{1}{x^2\sqrt{64-x^2}}dx$

4. $\int \frac{4x+7}{x^2-10x-24}\,dx$

5. Estimate $\int_5^8 \cos(x^2-1)dx$ using Midpoint Rule with n = 6. Write the sum; you do not have to evaluate the sum.

6. Calculate the following; it the integral does not converge, state "does not converge."

a. $\int_1^{+\infty} \frac{1}{x^2+4x}\,dx$

b. $\int_{-3}^{3} \frac{1}{\sqrt{3-x}}\,dx$

7. Tell why the following converge or diverge:

a. $\int_1^{+\infty} \frac{2-\cos(x)}{x}\,dx$

b. $\int_1^{+\infty} \frac{x+1}{2x^3+1}\,dx$

8. Calculate $\int \frac{3x+5}{(x+7)^2+25}\,dx$

9. Write the form of the partial fraction decomposition that you would use to calculate the following integral (you do not have to solve for the constants nor evaluate the integral): $\int \frac{3x+5}{((x+7)^2+25)^2(x^2+8x+15)^3}\,dx$