

Since scores on Test #3 were so low and since it seems that everyone needs help with indefinite integrals, here is a list of extra credit problems.

Determine if the following integrals converge or diverge. If an integral converges, find what it converges to. **NO WORK = NO CREDIT**

1.  $\int_{-\infty}^0 e^{3x} dx$  (1 point)

2.  $\int_0^{\infty} x e^{-x} dx$  (1 point)

3.  $\int_2^{\infty} \frac{1}{x\sqrt{\ln(x)}} dx$  (2 points)

4.  $\int_4^{\infty} \frac{2}{x^2 - 1} dx$  (2 points)

5.  $\int_0^{\infty} \frac{1}{x^2} dx$  (2 points)

6.  $\int_0^3 \frac{dx}{x-2}$  (1 point)

7.  $\int_1^{\infty} \frac{\ln(x)}{x^2} dx$  (2 points)

8.  $\int_0^4 \frac{dx}{(x-2)^{5/3}}$  (1 point)

Use a **comparison test** to determine if the following integrals converge or diverge.  
1 correct answer = 2 points. **NO WORK = NO CREDIT**

9.  $\int_1^{\infty} \frac{\cos^2(x)}{1+x^2} dx$

10.  $\int_1^{\infty} \frac{x^3 + 2x + \sin(x) + 1}{3x^4 - x - \cos^2(x)} dx$

11.  $\int_1^{\infty} e^{-x^2} dx$  *Hint:  $e^{x^2} \geq e^x$*

12.  $\int_0^1 \frac{e^{-x}}{\sqrt{x}} dx$

**DUE:** Wednesday, April 22<sup>nd</sup>.