1.(1 pt) Compute the value of the following improper integral if it converges. If it diverges, enter INF if it diverges to infinity, MINF if it diverges to minus infinity, or DIV otherwise (hint: integrate by parts).

$$\int_1^\infty \frac{8\ln(x)}{x^7}dx$$

Determine whether
$\sum_{n=1}^{\infty}(\frac{8\ln(n)}{n^7})$
is a convergent series. Enter C if the series is convergent, or D if it is divergent. _____

2.(1 pt) Find the value of

$$\int_2^\infty \frac{dx}{2x(\ln(2x))^2}$$

Determine whether
$\sum_{n=2}^{\infty}(\frac{1}{2n(\ln(2n))^2})$
Enter A if series is convergent, B if series is divergent. _____

3.(1 pt) Find the value of

$$\int_2^\infty \frac{dx}{(5x-2)^2}$$

Determine whether
$\sum_{n=2}^{\infty}(\frac{1}{(5x-2)^2})$
Enter A if series is convergent, B if series is divergent. _____

4.(1 pt) (a) Compute s_5 (the 5th partial sum) of $s = \sum_{n=1}^{\infty}\frac{1}{1n^3}$

(b) Estimate the error in using s_5 as an approximation of the sum of the series. (i.e. use $\int_5^\infty f(x)dx \geq R_5$)

(c) Use n = 5 and

$$s_n + \int_{n+1}^\infty f(x)dx \leq s \leq s_n + \int_n^\infty f(x)dx$$

to find a better estimate of the sum.

_____ $\leq s \leq$ _____

5.(1 pt) Test each of the following series for convergence by the Integral Test. If the Integral Test can be applied to the series, enter CONV if it converges or DIV if it diverges. If the integral test cannot be applied to the series, enter NA. (Note: this means that even if you know a given series converges by some other test, but the Integral Test cannot be applied to it, then you must enter NA rather than CONV.)

__ 1. $\sum_{n=1}^{\infty} ne^{6n}$
__ 2. $\sum_{n=1}^{\infty} \frac{n+5}{(-3)^n}$
__ 3. $\sum_{n=1}^{\infty} \frac{\ln(7n)}{n}$
__ 4. $\sum_{n=1}^{\infty} \frac{3}{n\ln(6n)}$
__ 5. $\sum_{n=1}^{\infty} ne^{-6n}$

6.(1 pt) Find the value of $\int_1^\infty \frac{6dx}{x^2+1}$

Determine whether $\sum_{n=1}^{\infty}(\frac{6}{n^2+1})$
Enter A if series is convergent, B if series is divergent. _____

7.(1 pt) Find the value of $\int_1^\infty 8x^2e^{-x^3}$

Determine whether $\sum_{n=1}^{\infty}(8n^2e^{-n^3}$
Enter A if series is convergent, B if series is divergent. _____