1.(1 pt) Given:
$A_n = \frac{5n}{-2n+9}$
For both of the following answer blanks, decide whether the given sequence or series is convergent or divergent. If convergent, enter the limit (for a sequence) or the sum (for a series). If divergent, enter INF if it diverges to infinity, MINF if it diverges to minus infinity, or DIV otherwise.

(a) The series $\sum_{n=1}^{\infty}(A_n)$. ______
(b) The sequence $\{A_n\}$. ______

2.(1 pt) Given:
$A_n = \frac{16^{n/2}}{2^{2n}}$
Determine: (a) whether $\sum_{n=1}^{\infty}(A_n)$ is convergent. ______
(b) whether $\{A_n\}$is convergent. ______ If convergent, enter the limit of convergence. If not, enter "DIV" (unquoted).

3.(1 pt) Given:
$A_n = \frac{90}{9^n}$
Determine:

(a) whether $\sum_{n=1}^{\infty}(A_n)$ is convergent. ______ and
(b) whether $\{A_n\}$is convergent. ______
If convergent, enter the limit of convergence. If not, enter "DIV" (unquoted).

4.(1 pt) Given:
$A_n = \frac{7^n}{70}$
Determine: (a) whether $\sum_{n=1}^{\infty}(A_n)$ is convergent. ______ (b) whether $\{A_n\}$is convergent. ______ If convergent, enter the limit of convergence. If not, enter 'DIV' (unquoted).

5.(1 pt) Match each of the following with the correct statement.
C stands for Convergent, D stands for Divergent.

— 1. $\sum_{n=1}^{\infty}\frac{1}{6+\sqrt[3]{n^4}}$
— 2. $\sum_{n=1}^{\infty}\frac{2+6^n}{7+5^n}$
— 3. $\sum_{n=1}^{\infty}\frac{7}{n^2-9}$
— 4. $\sum_{n=1}^{\infty}\frac{7}{n(n+4)}$
— 5. $\sum_{n=1}^{\infty}\frac{ln(n)}{2n}$

6.(1 pt) Match each of the following with the correct statement.
C stands for Convergent, D stands for Divergent.

— 1. $\sum_{n=1}^{\infty}\frac{6}{n(n+7)}$
— 2. $\sum_{n=1}^{\infty}\frac{\ln(n)}{7n}$
— 3. $\sum_{n=1}^{\infty}\frac{1}{5+\sqrt[4]{n^6}}$
— 4. $\sum_{n=1}^{\infty}\frac{10+5^n}{5+3^n}$
— 5. $\sum_{n=1}^{\infty}\frac{6}{n^7-100}$

7.(1 pt) Determine whether the series is convergent or divergent.

$$\sum_{n=1}^{\infty}\left(\frac{10}{\sqrt[5]{n^3}}+\frac{9}{n^7}\right)$$

If convergent, enter the 5 th partial sum to estimate the sum of the series; otherwise, enter DIV.
(Note: if you have trouble reading this problem, try selecting typeset mode below and then hitting the submit answer button.)

8.(1 pt) Match each of the following with the correct statement.
C stands for Convergent, D stands for Divergent.

— 1. $\sum_{n=1}^{\infty}\frac{6}{n^4+n^2}$
— 2. $\sum_{n=1}^{\infty}\frac{9+5^n}{6^n}$
— 3. $\sum_{n=2}^{\infty}\frac{8}{2n\ln(n)}$
— 4. $\sum_{n=1}^{\infty}\frac{n^7}{n^4+5}$
— 5. $\sum_{n=1}^{\infty}ne^{-n^2}$

9.(1 pt) Match each of the following with the correct statement.
C stands for Convergent, D stands for Divergent.

— 1. $\sum_{n=2}^{\infty}\frac{7}{9n\ln(n)}$
— 2. $\sum_{n=1}^{\infty}\frac{6}{n^5+n^9}$
— 3. $\sum_{n=1}^{\infty}\frac{3+9^n}{2^n}$
— 4. $\sum_{n=1}^{\infty}ne^{-n^2}$
— 5. $\sum_{n=1}^{\infty}\frac{n^4}{n^5+4}$

10.(1 pt) For each of the following series, tell whether or not you can apply the 3-condition test (i.e. the alternating series test). If you can apply this test, enter D if the series diverges, or C if the series converges. If you can't apply this test (even if you know how the series behaves by some other test), enter N.

— 1. $\sum_{n=1}^{\infty} \frac{(-1)^n(n^4+2n)}{n^3-1}$

— 2. $\sum_{n=1}^{\infty} \frac{(-1)^n \cos(n)}{n^2}$

— 3. $\sum_{n=1}^{\infty} \frac{(-1)^n(n^{10}+1)}{e^n}$

— 4. $\sum_{n=1}^{\infty} \frac{(-1)^n(n^3+1)}{n^4+1}$

— 5. $\sum_{n=1}^{\infty} \frac{(-1)^n}{n^5}$

— 6. $\sum_{n=1}^{\infty} \frac{(-1)^n(n^3+1)}{n^3+7}$

11.(1 pt) For the following alternating series,
$\sum_{n=1}^{\infty} a_n = 1 - \frac{1}{10} + \frac{1}{100} - \frac{1}{1000} + \ldots$
how many terms do you have to go for your approximation (your partial sum) to be within 1e-05 from the convergent value of that series?

12.(1 pt) For each of the following series, tell whether or not you can apply the 3-condition test (i.e. the alternating series test). If you can apply this test, enter D if the series diverges, or C if the series converges. If you can't apply this test (even if you know how the series behaves by some other test), enter N.

— 1. $\sum_{n=1}^{\infty} \frac{(-1)^n}{n^2+5}$

— 2. $\sum_{n=1}^{\infty} \frac{(-1)^n n!}{n^n}$

— 3. $\sum_{n=1}^{\infty} \frac{(-1)^n n!}{e^n}$

— 4. $\sum_{n=1}^{\infty} \frac{(-1)^n e^n}{n!}$

— 5. $\sum_{n=1}^{\infty} \frac{(-1)^n n^n}{n!}$

— 6. $\sum_{n=1}^{\infty} \frac{(-1)^n cos(n\pi)}{n^5}$

13.(1 pt) If the following series converges, compute its sum. Otherwise, enter INF if it diverges to infinity, MINF if it diverges to minus infinity, and DIV otherwise.

$$\sum_{n=1}^{\infty} \frac{3+8^n}{8^n}$$

14.(1 pt) For the following alternating series,
$\sum_{n=1}^{\infty} a_n = 0.45 - \frac{(0.45)^3}{3!} + \frac{(0.45)^5}{5!} - \frac{(0.45)^7}{7!} + \ldots$
how many terms do you have to go for your approximation (your partial sum) to be within 0.0000001 from the convergent value of that series?

15.(1 pt) For the following alternating series,
$\sum_{n=1}^{\infty} a_n = 1 - \frac{(0.5)^2}{2!} + \frac{(0.5)^4}{4!} - \frac{(0.5)^6}{6!} + \frac{(0.5)^8}{8!} - \ldots$
how many terms do you have to go for your approximation (your partial sum) to be within 0.0000001 from the convergent value of that series?