

9. [14 points] Determine the convergence or divergence of the following series. In questions (a) and (b) you need to support your answers by stating and properly justifying the use of the test(s) or facts you used to prove the convergence or divergence of the series. Circle your answer. Show all your work.

a. [4 points] $\sum_{n=1}^{\infty} \frac{2n}{\sqrt{n^5 + 1}}$ Converges Diverges

b. [4 points] $\sum_{n=1}^{\infty} n^2 e^{-n^3}$ Converges Diverges

- c. [6 points] Determine if the following series converge absolutely, conditionally or diverge. Circle your answers. No justification is required.

a). $\sum_{n=1}^{\infty} \frac{\sin(3n)}{n^6 + 1}$

Converges absolutely

Converges conditionally

Diverges

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

Converges absolutely

Converges conditionally

Diverges