

NAME:

STUDENT NO:

Q-3) Let $a_{2n-1} = \frac{1}{5^n}$, $a_{2n} = -\frac{1}{8^n}$ for $n = 1, 2, \dots$. Show that the series $\sum_{n=1}^{\infty} a_n$ converges absolutely. Find its sum. Justify your calculations.

Solution:

Use the root test for $|a_n|$ to find that the series converges absolutely. Then any rearrangement of the terms will converge to the same sum. First add up the positive terms, then the negative terms as geometric series to find the sum as $\frac{3}{28}$.