

SCORE

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NAME:.....

1. In each of the following cases, determine whether the sequence converges or diverges, and give the limit of the sequence, if it exists.

(i) $a_n = \frac{2 + n^3}{1 + 2n^3}$

(ii) $a_n = \cos n \operatorname{over} \sqrt{n}$

(iii) $a_n = \frac{n^{10}}{2^n}$

(iv) $a_n = \sqrt{n^2 + n} - n$

2. Decide whether the following series are convergent or divergent. Explain your reasoning, and find the sum of the series where appropriate.

(i) $\sum_{n=0}^{n=\infty} 3^n 4^{-n}$

(ii) $\sum_{n=1}^{n=\infty} \frac{1}{n(n+1)}$

$$(iii) \sum_{n=1}^{n=\infty} \frac{1}{2 + \sin n}$$