

1. [6 points] For each sequence given by the following formulas, determine if the corresponding sequence converges. If the sequence does converge find what the sequence converges to. To receive full credit you must show some work / explain your reasoning.

(a) $a_n = \sin(n\pi)$

(b) $b_n = \frac{\pi n^2 - 45n + 2}{2n^2 + 3n - 1}$

2. (a) [2 points] Is the following always true: If the sequence $(a_k)_{k=1}^{\infty}$ converges to 0 then the series $\sum_{k=1}^{\infty} a_k$ converges.

True/False

- (b) [2 points] Briefly (in no more than 2 sentences), in your own words, explain what it means for a series $\sum_{k=1}^{\infty} a_k$ to converge.

Total: /10