

Name: _____ **Section:** 201 (starts at 08:00)
202 (starts at 09:35)

1. (4 points) Set up the integral to find the surface area of a unit sphere. Evaluate it.
2. Consider the series

$$\sum_{n=1}^{\infty} a_n,$$

where $a_n > 0$. Let P_k be the sequence of its partial sums:

$$P_k = \sum_{n=1}^k a_n.$$

It is known that $P_k < 10$ for all k .

- (a) (3 points) Does the series $\sum_{n=1}^{\infty} a_n$ necessarily converge? Justify your answer (if yes, show why; if no, provide a counterexample).
- (b) (3 points) Does the limit $\lim_{n \rightarrow \infty} a_n$ exist? If so, find it. Justify your answer.