

Math 2300-013: Quiz 6

Name: _____

Score: _____

1. (2 points) Which of the following are true statements? Circle your answer(s).

(i) If $a_n \rightarrow 0$, then $\sum_{n=1}^{\infty} a_n$ converges.

(ii) If $a_n \not\rightarrow 0$, then $\sum_{n=1}^{\infty} a_n$ diverges.

(iii) If $\sum_{n=1}^{\infty} a_n$ converges, then $a_n \rightarrow 0$.

(iv) If $\sum_{n=1}^{\infty} a_n$ diverges, then $a_n \not\rightarrow 0$.

2. (2 points each) For each of the following series, determine if the series converges or diverges. If the series converges, find its sum. In all cases, justify your answers.

(a)
$$\sum_{n=1}^{\infty} \sqrt[n]{4}$$

(b)
$$\sum_{n=2}^{\infty} \frac{(-3)^n}{7^{n+3}}$$

$$(c) \sum_{n=3}^{\infty} \frac{1}{n\sqrt{\ln(n)}}$$

$$(d) \sum_{n=1}^{\infty} \ln \left| \frac{\cos\left(\frac{1}{n}\right)}{\cos\left(\frac{1}{n+1}\right)} \right|$$