

MTH 1126 - Test #4

SPRING 2019

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Name _____

Show **CLEARLY** how you arrive at your answers.

1. $\int_1^{\infty} \frac{1}{x^{\frac{3}{2}}} dx =$ (Determine convergence/divergence. If the integral converges, find its value.)

2. $\int_2^5 \frac{1}{(x-5)^{\frac{1}{3}}} dx =$

3. Determine convergence/divergence of the sequence whose n^{th} term is given by:

$$a_n = \frac{2n^2+1}{n^3}. \text{ (i.e., Determine convergence/divergence of the sequence } \left\{ \frac{2n^2+1}{n^3} \right\}_{n=1}^{\infty} \text{.)}$$

In Exercise 4, determine convergence/divergence of the given series. (Justify your answer!) **If the series converges, determine its sum.**

$$4. \sum_{n=2}^{\infty} \frac{2}{n^2-1} =$$

In Exercises 5-6, determine convergence/divergence of the given series. (Justify your answers!) **If the series converges, determine its sum.**

$$5. \sum_{n=1}^{\infty} \frac{4}{5^n} =$$

$$6. \sum_{n=1}^{\infty} \ln(n) =$$

In Exercises 7-8, determine convergence/divergence of the given series. (Justify your answers!)

$$7. \sum_{n=1}^{\infty} \frac{1}{n^5}$$

$$8. \sum_{n=1}^{\infty} \frac{1}{5n-2}$$