

MTH 1126 - Test #3

SPRING 2006

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Name _____

Instructions. Show CLEARLY how you arrive at your answers

1. $\int \frac{1}{\sqrt{9x^2+4}} dx =$

2. $\int_2^\infty \frac{1}{x^2} dx =$

3. $\lim_{x \rightarrow 0} \frac{\cos(x)-1}{e^x - e^{-x}} =$

For Problems 4-7, determine whether the given series converges or diverges. If the series converges, determine its sum.

4. $\sum_{n=1}^\infty \frac{1}{n} = \frac{1}{1} + \frac{1}{2} + \frac{1}{3} + \dots$

$$5. \sum_{n=1}^{\infty} \frac{5}{3^n} = \frac{5}{3} + \frac{5}{9} + \frac{5}{27} + \dots$$

$$6. \sum_{n=1}^{\infty} \frac{n^2}{2n^2+1} = \frac{1}{3} + \frac{4}{9} + \frac{9}{19} + \dots$$

$$7. \sum_{n=1}^{\infty} \frac{2}{n^2+2n} = \frac{2}{3} + \frac{2}{8} + \frac{2}{15} + \dots$$