Hw1 (11.1-11.3) (21864329)

Question | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |

1. Question Details SCalcET9M 11.1.019. [4782351]

Find a formula for the general term a_n of the sequence, assuming that the pattern of the first few terms continues. (Assume that n begins with 1.)

$$\left\{-4, \frac{8}{3}, -\frac{16}{9}, \frac{32}{27}, -\frac{64}{81}, \ldots\right\}$$

$a_n =$

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2. Question Details SCalcET9M 11.1.031. [4783141]

Determine whether the sequence converges or diverges. If it converges, find the limit. (If the sequence diverges, enter DIVERGES.)

$$a_n = \frac{n^4}{n^3 - 4n}$$

$\lim_{n \to \infty} a_n =$

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3. Question Details SCalcET9M 11.1.035.EP. [5094034]

Determine whether the sequence converges or diverges. If it converges, find the limit. (If the sequence diverges, enter DIVERGES.)

(a) $a_n = -\frac{3}{\sqrt{n}}$

$\lim_{n \to \infty} a_n =$

(b) $b_n = e^{-3/\sqrt{n}}$

$\lim_{n \to \infty} b_n =$

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4. Question Details SCalcET9M 11.1.047.EP. [5094222]

Determine whether the sequence converges or diverges. If it converges, find the limit. (If the sequence diverges, enter DIVERGES.)

$$\{n^2 e^{-3n}\}$$

$\lim_{n\to\infty} a_n =$

Justify your answer.

- Use the Squeeze Theorem by comparing to the sequence $b_n = (1)e^{-3n}$.
- Use L'Hopital's Rule to find an equivalent limit that does not have an indeterminate form.
- Rewrite the expression as a quotient and use the Quotient Rule.
- Use the Power Rule by finding a common exponent of the products.

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5. Question Details SCalcET9M 11.1.056. [4782952]

Determine whether the sequence converges or diverges. If it converges, find the limit. (If the sequence diverges, enter DIVERGES.)

$$a_n = \frac{(\ln(n))^2}{n}$$

$\lim_{n\to\infty} a_n =$

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6. Question Details SCalcET9M 11.1.061. [4783050]

Determine whether the sequence converges or diverges. If it converges, find the limit. (If the sequence diverges, enter DIVERGES.)

$$a_n = \frac{3n!}{2^n}$$

$\lim_{n\to\infty} a_n =$

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7. Question Details SCalcET9M 11.1.083. [5093640]

Determine whether the sequence is increasing, decreasing, or not monotonic. (Assume that n begins with 1.)

$$a_n = 4 - 3ne^{-n}$$

- increasing
- decreasing
- not monotonic

Is the sequence bounded?

- bounded
- not bounded

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8. Question Details SCalcET9M 11.2.018. [4782478]

Determine whether the series is convergent or divergent by expressing the nth partial sum s_n as a telescoping sum. If it is convergent, find its sum. (If the quantity diverges, enter DIVERGES.)

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

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9. Question Details SCalcET9M 11.2.049. [4783201]

Determine whether the series is convergent or divergent. If it is convergent, find its sum. (If the quantity diverges, enter DIVERGES.)

$$\sum_{n=1}^{\infty} \left(\frac{3}{e^n} + \frac{2}{n(n+1)} \right)$$

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10. Question Details SCalcET9M 11.2.063. [5093945]

Find the values of x for which the series converges. (Enter your answer using interval notation.)

$$\sum_{n=0}^{\infty} \frac{4^n}{x^n}$$

Find the sum of the series for those values of x.

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11. Question Details SCalcET9M 11.2.065. [5093717]

Find the values of x for which the series converges. (Enter your answer using interval notation.)

$$\sum_{n=0}^{\infty} e^{nx}$$

Find the sum of the series for those values of x.

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12. Question Details SCalcET9M 11.3.003. [5094106]

Use the Integral Test to determine whether the series is convergent or divergent.

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

Evaluate the following integral.

$$\int_1^{\infty} x^{-4}\,dx$$

Since the integral ---Select--- finite, the series is ---Select--- .

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13. Question Details SCalcET9M 11.3.008. [4783273]

Use the Integral Test to determine whether the series is convergent or divergent.

$$\sum_{n=1}^{\infty} n^3 e^{-n^4}$$

Evaluate the following integral.

$$\int_1^{\infty} x^3 e^{-x^4}\,dx$$

Since the integral ---Select--- finite, the series is ---Select--- .

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14. Question Details SCalcET9M 11.3.029. [4782915]

Consider the following function.

$$f(x) = \frac{3\cos(\pi x)}{\sqrt{x}}$$

What conclusions can be made about the series $\sum_{n=1}^{\infty} \frac{3\cos(\pi n)}{\sqrt{n}}$ and the Integral Test?

- ○ The Integral Test can be used to determine whether the series is convergent since the function is positive and decreasing on $[1, \infty)$.
- ○ The Integral Test can be used to determine whether the series is convergent since the function is not positive and not decreasing on $[1, \infty)$.
- ○ The Integral Test can be used to determine whether the series is convergent since it does not matter if the function is positive or decreasing on $[1, \infty)$.
- ○ The Integral Test cannot be used to determine whether the series is convergent since the function is not positive and not decreasing on $[1, \infty)$.
- ○ There is not enough information to determine whether or not the Integral Test can be used or not.

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15. Question Details SCalcET9M 11.3.031. [5093038]

Find the values of p for which the series is convergent. (Enter your answer as an inequality.)

$$\sum_{n=2}^{\infty} \frac{3}{n(\ln(n))^p}$$

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Assignment Details