

SPRING 2012

1. Determine the limit of the sequence

$$a_n = n(2^{1/n} - 1)$$

- A) $\ln 2$ B) $\frac{1}{e}$ C) e^2 D) 0 E) 1 F) ∞

SPRING 2011

13. Suppose that a series $\sum_{n=1}^{\infty} a_n$ converges to e , where each $a_n > 0$. Then the series $\sum_{n=1}^{\infty} 1/a_n$

- (a) converges to $-1/e$. (b) converges to $1/e$. (c) converges to 0.
(d) converges to e . (e) converges to π . (f) diverges.

FALL 2010

11. Find the value of b for which

$$\sum_{n=0}^{\infty} e^{nb} = 1 + e^b + e^{2b} + e^{3b} + \dots = 9$$

(A) $e \ln\left(\frac{1}{9}\right)$

(B) $\ln\left(\frac{1}{9}\right)$

(C) $\frac{-1}{9}$

(D) $\frac{-e}{9}$

(E) $\ln\left(\frac{8}{9}\right)$

(F) $\ln\left(\frac{9}{10}\right)$

(G) $\ln\left(\frac{10}{9}\right)$

(H) $\ln(10)$

Spring 2010

14. Determine if the sequence $a_n = \frac{\sqrt{n+1} - \sqrt{n}}{\sqrt{n+1} + \sqrt{n}}$ converges or diverges. If it converges, find the limit.

- (a) 2 (b) $\frac{1}{2}$ (c) $\sqrt{2}$ (d) $\frac{1}{\sqrt{2}}$ (e) 0 (f) The sequence is divergent.

Fall 2007

12. Find the limit of the sequence $\left\{ \left(\frac{1+n}{2+n} \right)^n \right\}$.

a) $\frac{1}{2}$

b) $\frac{1}{e}$

c) 0

d) 1

e) e

f) sequence diverges

Fall 2007

13. Determine if the series is convergent or divergent. If it is convergent, find its sum.

$$\sum_{n=1}^{\infty} \frac{3^n + 4^n}{7^n}$$

a) 1

b) $\frac{1}{7}$

c) $\frac{5}{12}$

d) $\frac{12}{7}$

e) $\frac{25}{12}$

f) divergent

FALL 2006

14. Find the limit of the sequence $\left\{ \frac{1}{2} \ln(n^2 + 1) - \ln(2n + 1) \right\}$.

- (A) -2 (B) $-\ln 2$ (C) 0 (D) $\ln 2$ (E) 2 (F) sequence diverges

Math 104-Rimmer
Hand in Hw # 10

Name _____

ANSWERS:

SPRING 2012 # 1: A

SPRING 2011 # 13: F

FALL 2010 # 11: E

SPRING 2010 # 14: E

FALL 2007 # 12: B

FALL 2007 # 13: E

FALL 2006 # 14: B