

TEST #3 REVIEW:

TELL WHETHER THE FOLLOWING SERIES CONVERGE OR DIVERGE. IF A SERIES CONVERGES, FIND ITS SUM.

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

#2.
$$\sum_{n=1}^{\infty} (-1)^{n-1} \frac{n^{1-n}}{3^2}$$

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

#4.
$$\sum_{n=0}^{\infty} \frac{(-1)^n 3^n}{2^{n-1}}$$

DETERMINE WHETHER THE FOLLOWING SERIES CONVERGE OR DIVERGE

#5.
$$\sum_{n=1}^{\infty} n^{-n}$$

#6.
$$\sum_{n=2}^{\infty} \frac{\ln n}{n^2} \rightarrow \text{USE INTEGRAL TEST}$$

#7.
$$\sum_{n=1}^{\infty} \frac{\tan^{-1} n}{n^2+1}$$

USE A COMPARISON TEST OR LIMIT COMPARISON TEST

#8.
$$\sum_{n=3}^{\infty} \frac{3^n}{2^{n-4}}$$

#9.
$$\sum_{n=1}^{\infty} \frac{\cos^2 n}{n^2}$$

$$\#10. \sum_{n=1}^{\infty} \frac{n^2+1}{n^2(n+3)}$$

$$\#11. \sum_{n=1}^{\infty} \frac{n}{\sqrt{n^5+n}}$$

SHOW CONVERGENCE / DIVERGENCE BY A.S.T.

$$\#12. \sum_{n=1}^{\infty} \frac{(-1)^{n-1} n^2}{2n^2-1}$$

$$\#13. \sum_{n=0}^{\infty} \frac{(-1)^{n+1} e^n}{n^{n+1}}$$

$$\#14. \sum_{n=1}^{\infty} \frac{\cos n\pi}{n}$$

SHOW CONVERGENCE, ABSOLUTE CONVERGENCE, CONDITIONAL CONVERGENCE OR DIVERGENCE

$$\#15. \sum_{n=1}^{\infty} \frac{(-1)^n n}{n^2+1}$$

$$\#16. \sum_{n=1}^{\infty} \frac{\cos(n+1)}{n\sqrt{n}}$$

$$\#17. \sum_{n=1}^{\infty} \frac{(-5)^{n-1}}{n^2 \cdot 3^n}$$

$$\#18. \sum_{n=1}^{\infty} \left(\frac{n}{2n+1} \right)^n$$

FIND RADIUS AND INTERVAL OF CONVERGENCE

$$\#19. \sum_{n=0}^{\infty} \frac{(-1)^n n! x^n}{2^n}$$

$$\#20. \sum_{n=0}^{\infty} \frac{(-1)^n (3x+2)^{2n}}{(2n)!}$$

$$\#21. \sum_{n=1}^{\infty} \frac{(3x-1)^n}{n^3+n}$$

$$\#22. \sum_{n=1}^{\infty} \frac{e^n x^n}{n}$$

FIND A TAYLOR SERIES REPRESENTATION AND INTERVAL OF CONVERGENCE

$$\#23. f(x) = \frac{1}{1+3x}, c=0$$

$$\#24. f(x) = e^{2x}, c=-1$$

FIND TAYLOR POLYNOMIAL AND MAX. ERROR

#25. $f(x) = 1/x$, $C=1$, $n=5$ on $[0.9, 1.1]$