

Assignment 9 - Due on Tuesday, ~~14~~ April 1

Find whether the following series converge

1)  $\sum_{k=1}^{\infty} \frac{1}{3^k - 2^k}$  , 2)  $\sum_{k=1}^{\infty} \frac{1}{2k - \sqrt{k}}$  , 3)  $\sum_{k=1}^{\infty} \sin(k)$  ,

4)  $\sum_{k=1}^{\infty} \frac{1}{k^{15}}$

Find: 5)  $\sum_{n=1}^{\infty} \frac{10}{n(n+2)}$  , 6)  $\sum_{n=1}^{\infty} \frac{1}{n^3}$

Integrate: 6)  $\int (36 - 9x^2)^{3/2} dx$  ,

7)  $\int \frac{dx}{x^2 - 3x + 2}$

Area the following vectors parallel?

8)  $\langle 1, 3, 2 \rangle$  ,  $\langle 1, -3, 2 \rangle$

9)  $\langle 1, 3, -1 \rangle$  ,  $\langle -1, -3, 1 \rangle$

parallel

0) Find the plane perpendicular to a

$$2x + 3y + 5z = 5$$

and passing through  $(0, 0, 0)$ .

which

11) ~~Does the~~ level curve of  $Z = 2x^2 + 3y^2$   
passes through the ~~(0,0)~~ <sup>(1,2)</sup> ?

12) Show that

$$u(x, t) = 10e^{-t} \sin x.$$

satisfies

$$\frac{\partial u}{\partial t} = k \frac{\partial^2 u}{\partial x^2}$$