QUIZZES MATH 333-173

Quiz 1:

Find the directional derivative of $f(x.y) = x^3y^2 - y^5$ at $(1, 2)$ in the direction given by the angle $\pi/4$

Quiz 2:

Use the FTC to find the work done by $F(x.y) =< x^2y^2, \frac{2x^3y}{3} >$ to displace a particle from $(0, 0)$ to $(1, 3)$.

Quiz 3:

(i) Find $\mathcal{L}\{(t+3)\mathcal{U}(t-3)\}$. (ii) Expand $f(x) = x^2$, $0 \leq x \leq 2\pi$ in Fourier series if $T = 2\pi$. (ii) Prove

$$\frac{1}{1^2} + \frac{1}{2^2} + ... + \frac{1}{n^2} + ... = \frac{\pi^2}{6}.$$

Quiz 4: Solve

$$\begin{cases} \frac{\partial u}{\partial t} = \frac{\partial^2 u}{\partial x^2},\ 0 \leq x \leq L \\ u(0,t) = 0,\ u(L,t) = 0,\ t \geq 0 \\ u(x,0) = \begin{cases} 1,\ 0 \leq x \leq L/2 \\ 0,\ L/2 \leq x \leq L \end{cases} \end{cases}$$

Quiz 5: Solve

$$\begin{cases} u_{tt} = 4\left(u_{rr} + \frac{1}{r}u_r\right),\ 0 < r < 3,\ t > 0 \\ u(3,t) = 0,\ t \geq 0, \\ u(r,0) = 3J_0(\alpha_7 r),\ u_t(r,0) = 6J_0(\alpha_4 r),\ 0 < r < 3 \end{cases}$$