

2008 II B 4M12 PARTIAL DIFFERENTIAL EQUATIONS AND VARIATIONAL METHODS DR T PHYNES

Answers

1 (a) (i) $-(\mathbf{a} \cdot \mathbf{b}) \mathbf{a} \times \mathbf{c}$ (ii) $(\mathbf{c} \cdot \mathbf{a} \times \mathbf{b}) \mathbf{a}$

2 (a) $\frac{\partial F}{\partial y'} = 0$ (b) (ii) $x_0 = 0$, $b = \frac{a}{\pi}$, $y(a) = \frac{2a}{\pi}$

3 (d) $u(x,0) = \begin{cases} e^x(1-x^2/2) & x < \sqrt{2} \\ 0 & x > \sqrt{2} \end{cases}$

4 (b) $\underline{x}_1 = (x_0, y_0, -z_0)$