Mathematics 1E2 2006–07
HW 6 Due 21/11/06

Tutorial ...

Name:_____

ID:_____

(1)(10 marks) Find the least-squares approximating line for the data $(0,1),\ (2,2),\ (4,0),\ (6,3)$.

(2)(12 marks) Which of the following maps from E^2 to E^2 are linear? If not, why not?.
(i) $(x,y) \mapsto (x+1, y-1)$ (ii) $(x,y) \mapsto (x^2, x^2)$ (iii) $(x,y) \mapsto (x+y, x-y)$

(3)(10 marks) Construct the matrix of the map which projects points orthogonally onto the line $x + 2y = 0$.

(4)(18 marks) Let $P = (1,-3,-1)$, $Q = (1,-2,1)$, $R = (-4,10,1)$. Calculate the matrix of the linear map whose matrix with respect to the basis P, Q, R is

$$\begin{bmatrix} 1 & 2 & 1 \\ 0 & 2 & 3 \\ 0 & 0 & 2 \end{bmatrix}$$