

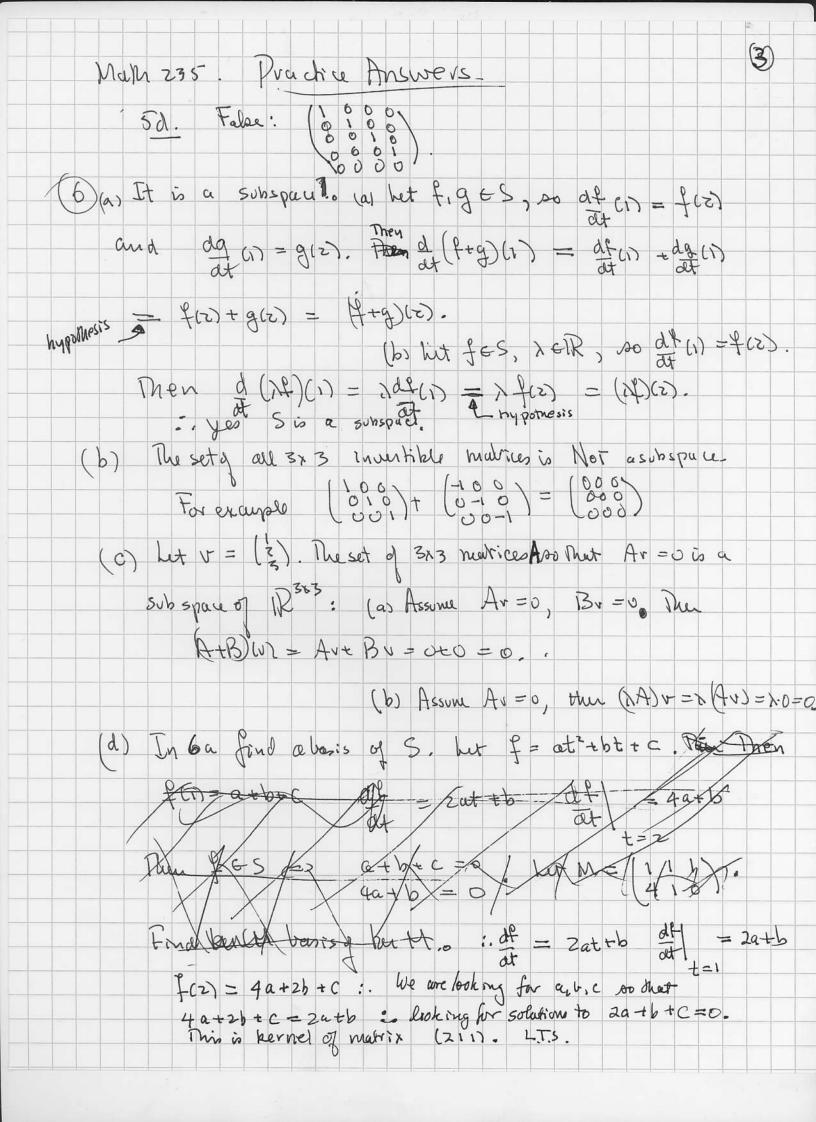
Man 235 Practice Answers 3c. $V_{\varepsilon} = \begin{pmatrix} -2 \end{pmatrix} = \begin{pmatrix} -4 \\ 3 \end{pmatrix} = \begin{pmatrix} -4 \\ 5 \end{pmatrix}_{A}$ 3d. MARA = (1-1) (4. 22-y+2=0 is the place thru the origin to (2,-1,1). We find abous: s of this plune. That is we find a bousis of the timean map assosciated to matrix M= (z-1,1). Setting y=1, z=0 mget X= 1/2 so (1) Gkunel of M Sett y=0, 2=1 we get x=-Yz so (-Yz) chernely M. Since These two vectors the in P we have R(12) = (12) R(c) = (1). We have R(2) = (1) het These Three vectors be our bearing. Then the multiple is (500) (suitably or du These vectors). 5(d). True. [[Let Mke the modix with colomns V... Vn. Thon ku (M) = 0 = (by vouh-nullity) @ voule = n = dim nin (M) But IR" is only subspace of IR" with dim n. (. min(M) = IRN.

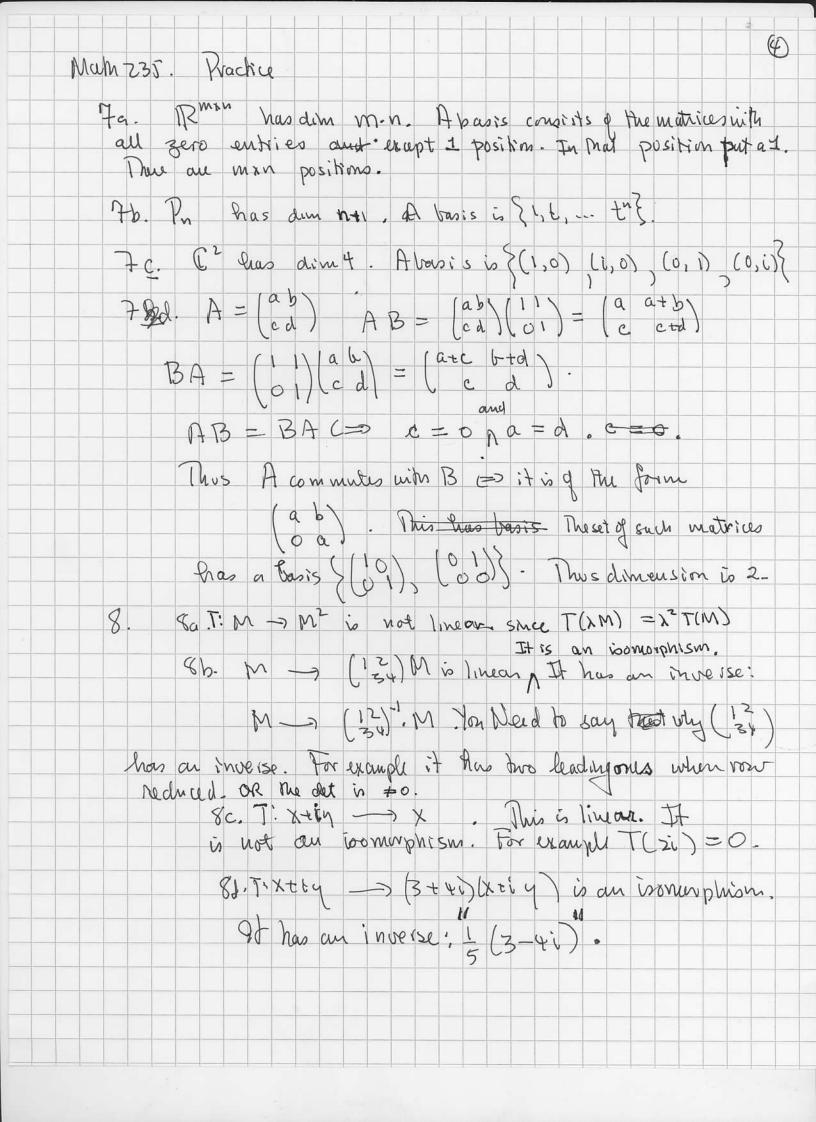
This say span of V. ... Un is all y IR" I OR (Liberter.). Let

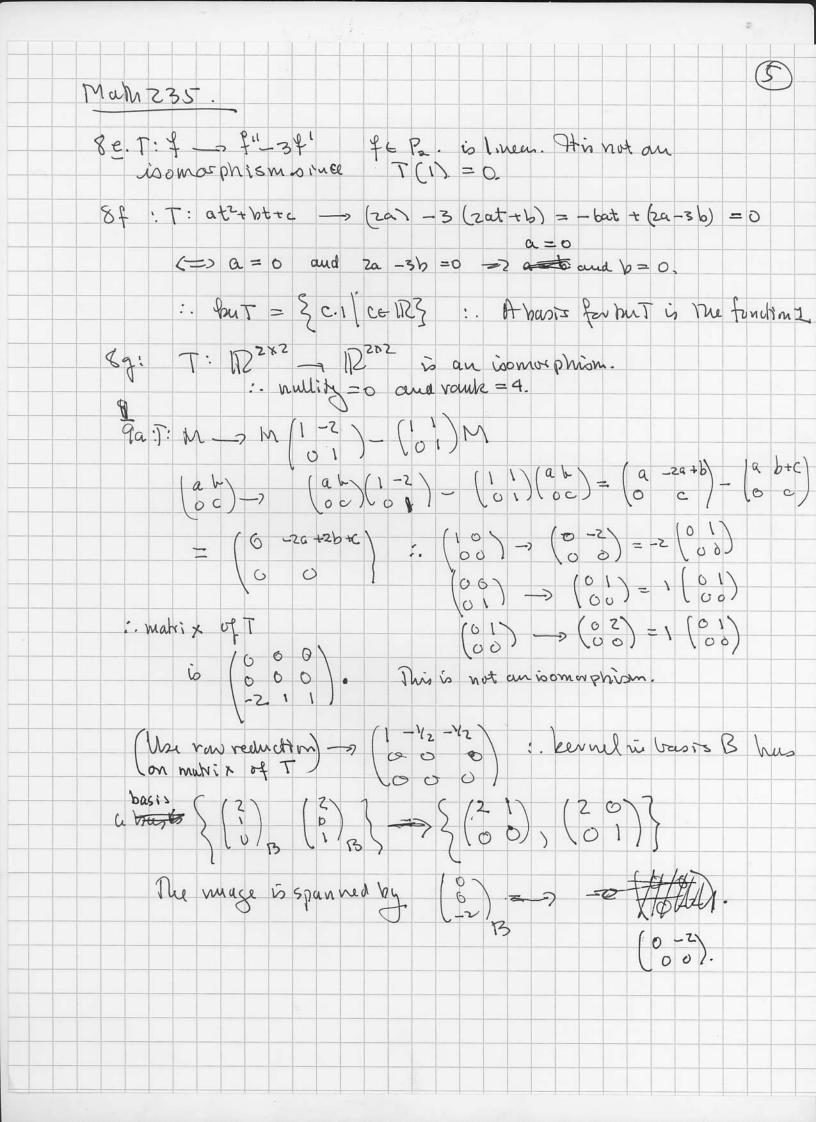
Whe subspace spanned by Ev., ... vn.}. It is down in; thus to = IR" I

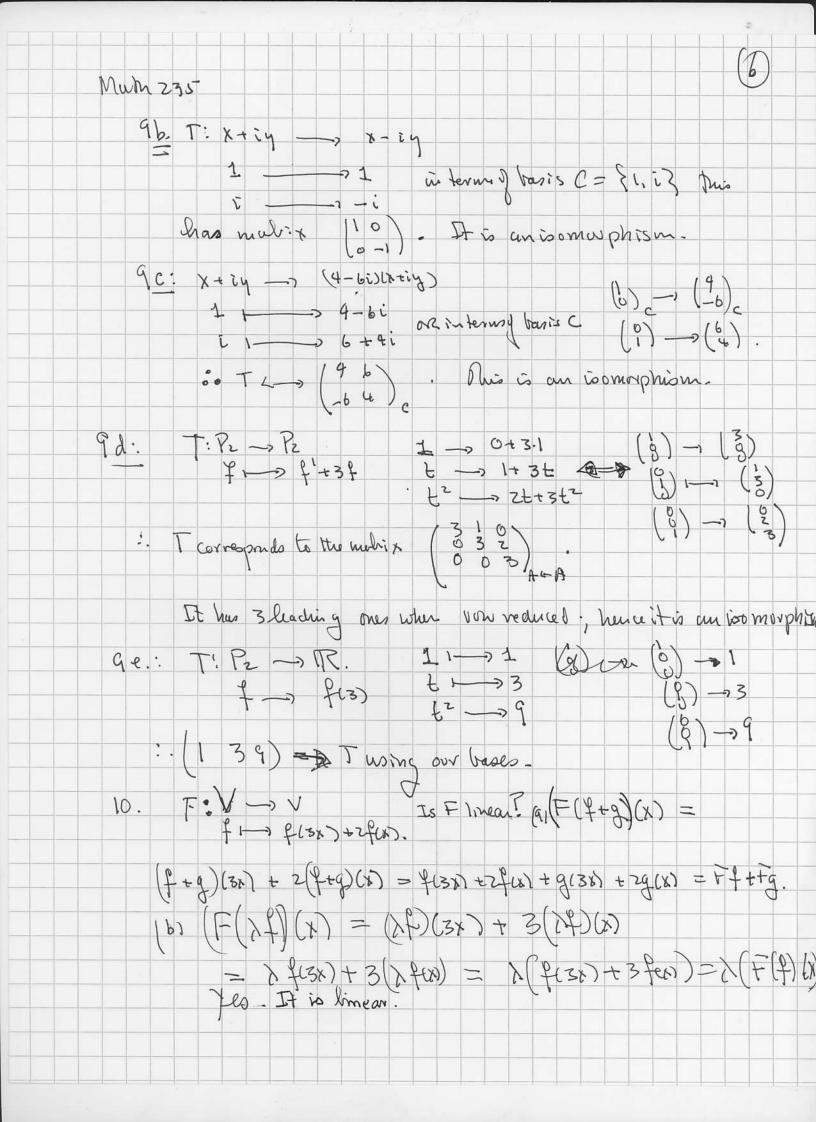
(b) talor: The mage is spanned key the column rectors. Thus

any basis of the unage has Ex elts, but dim IR" = 5. (C) True: 24+30+4w=34-45+5w= Phis is a non-trivial linear relation among {u,v,w}
Thus this set of vectors is linearly dependent









M 235. Practice Problem Answers 10b. Let G: V -> V be given by f(x) -> f'(x) +5f(x). This is linear, (a) G(f+g)(x) = (f+g)(x) + 5(f+g)(x) = P(x)+g(x) + 5(fex)+g(x)) = G(P(x)+ G(y)(x). (6). G(yt)(x) = (yt)(x) + (2(yt)(x)= 2 f'(x) + S. 2 f(x) = 2 (of(x). Done.