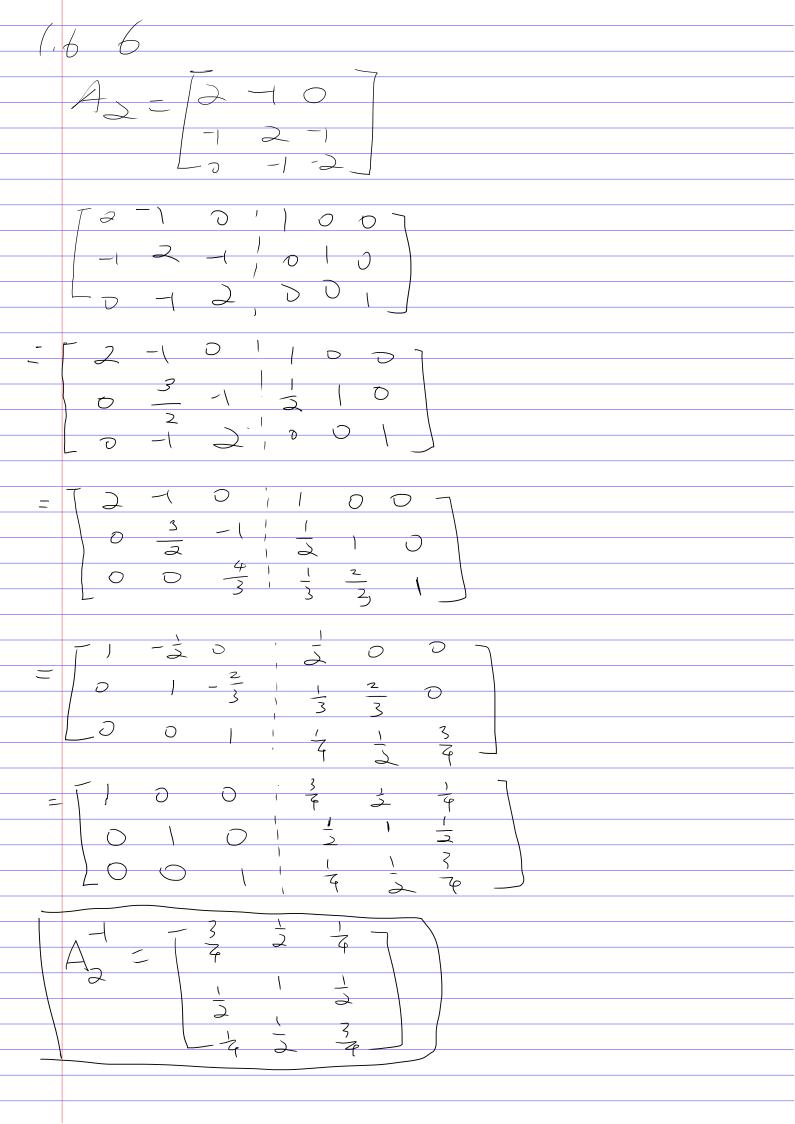
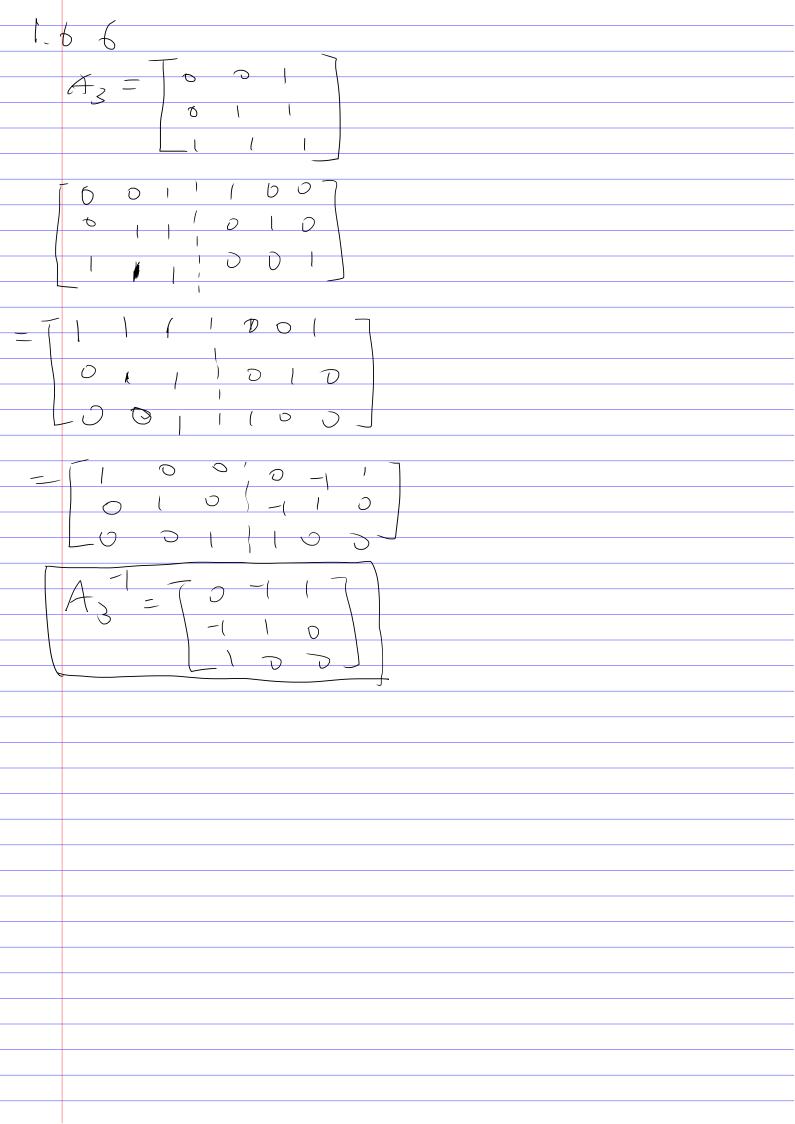
(W2 Zhanpeng Young





B. square matrix

Show
$$A = B + B^T$$
 is always symmetric

A $k = B - B^T$ is always shew symmetric

Find $A = B + B^T$ is always shew symmetric

Find $A = B + B^T$ is always shew symmetric

A $A = B + B^T$ is always shew symmetric

 $A = B + B^T$ is always shew symmetric

 $A = B + B^T$ is always symmetric

 $A = B + B^T$ is always

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21/2
a) (et V_1 = (0, a_1, b_1), V_2 = (0, q_2, b_2)
     V_1 + V_2 = (0, a_1 + a_2, b_1 + b_2) (In subspace)
    C.V, = (0, (a,, (b,)) (In subspace)
    Thus this is a subspace
b) (et v,c(1,d,-b,), V2=(1, dz, bz)
   VI +VZ = (2, aitaz, bitbz) (not in subspace)
   Ohns this is not a subspace
(ex V, be (a,, o, b,)
       Le be (az, bz, o)
    V1+V2= (a,+a2, b2, b,)
   Much us longer in either by or by plane
Thus it is not a subspare
d) a(1,1,0) + b(2,0,1)
      (a & b can be any scalar)
  Let V,= 9,(1,1,0) + b,(2,0-1)
       V2 = a2 (1, 1,0) + b2 (2,0,1)
   U, + V2 = (a,+a2)(1,1,0) + (b,+b2) (2,0,1)
        O, taz ER J, tbz ER (Ju swbs pace)
   C. V, = Ca, (1,1,0) + (3, (20,1) (In subspace)
```

```
This is a subspace
e) Let V_i = (a_1, b_1, c_1)
        V_2 = (G_2, b_2, C_2)
V_1 + V_2 = (a, + a_2, b, + b_2, C_1 + C_2)
C,+ (2 - (b,+b2) +3(9,+02)
- C1-5,+3a, + C2-b2+3a2
   D to =0. (In subspace)
 kV_{i}=(ka_{i},kb_{i},kc_{i})
 Kc_1 - kb_1 + 3ka_1 = k(c_1 - b_1 + 3a_1) = 0 (In sols pane)
Thus it is a subspace
```

let A be a symmetric matrix AijeAji, AijeR

B be a loner triangular matrix. Bij = 0, it i < j The Smallest Subsparl S that contains all Ash Bs is $S = \{ xA + \beta B | x, \beta \in \mathbb{R} \}$ A matrix (ES has entries that SCij ER is) $S = \mathbb{R}^{3\times3}$ $Cij \in \mathbb{R}$ i > jThe largest subspace contained in both subspaces is the subspace of a diagonal matrix $S_{A} \cap S_{B} = D$

