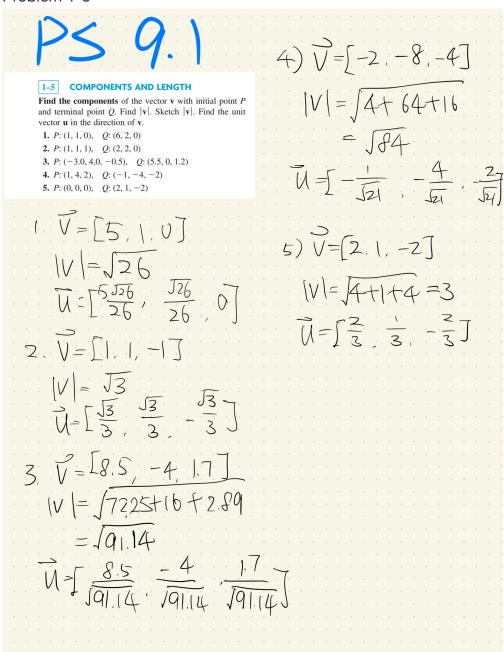
## Chapter 9 Vector Differential Calculus. Grad, Div, Curl

## P360 - Problem set 9.1

## Problem 1-5



- 6. Q=[4, 2, 13], |v|=4
- 7. Q=[4, 0. 1/2],  $|v| = \sqrt{149}/4$
- 8. Q=[13.1, 0.8, -2.0],  $|v| = \sqrt{171.61 + 0.64 + 4} = \sqrt{176.25}$

9. 
$$Q=[0, 0, 0], |v|=\sqrt{53}$$

10. Q=[0, 0, 0], 
$$|v|=3\sqrt{2}$$

11. 
$$2a=[6, 4, 0], 1/2a=[3/2, 1, 0], -a = [-3, -2, 0]$$

13. 
$$b+c=c+b=[1, 5, 8]$$

16. 
$$\frac{9}{2}a - 3c = 9(\frac{1}{2}a - \frac{1}{3}c) = [-3/2, 12, -24]$$

18. 
$$4a+3b = [0, 26, 0], -4a-3b=-(4a+3b)=[0, -26, 0]$$

19. 12-associative, 13-commutative, 14-16 scalar multiplication is distributive.

20. 
$$a+b=[a_1,a_2,...,a_n]+[b_1,b_2,...,b_n]=[a_1+b_1,a_2+b_2,...,a_n+b_n]=[b_1+a_1,b_2+a_2,...,b_n+a_n]=b+a$$

The rest can be approved in the simliar way.

21.