Dawson College: Linear Algebra: 201-105-DW-S05: Fall 2009

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Quiz 5

This quiz is graded out of ~~10~~ marks. No books, ~~calculators,~~ notes or cell phones are allowed. You must show all your work, the correct answer is worth 1 mark the remaining marks are given for the work. If you need more space for your answer use the back of the page.

Question 1. Let $S = \{1,2,3,4,5,6\}$.

a. *(1 mark)* Give two permutations of the set S.

b. *(1 mark)* Is $(2,1,3,5,4)$ a permutation of the set S, justify.

~~b. (2 marks) The set S will has how many permutations.~~

c. *(2 marks)* Determine the parity of the permutation $(5,2,1,6,3,4)$ of the set S.

Question 2. Let $\mathbf{u} = (-3,2,-1)$, $\mathbf{v} = (0,1,-2)$, $\mathbf{w} = (1,0,-2)$, $P_1(0,-2)$, $P_2(2,-3)$.

a. *(2 marks)* Simplify $0\mathbf{w} + (-2\mathbf{u} + 3\mathbf{v}) + 3\mathbf{u}$.

b. *(2 marks)* Find the vector having initial point P_1 and terminal point P_2.

1a) $(2,1,4,3,5,6)$, $(1,2,3,4,6,5)$ are two possibilities

b) No, since there is omission

c) $4+1+0+2+0+0=7$ $\therefore (5,2,1,6,3,4)$ is odd

2a) $\vec{0}$ $-2(-3,2,-1) + 3(0,1,-2) + 3(-3,2,-1)$

$= (6,-4,2) + (0,3,-6) + (-9,6,-3)$

$= (-3,5,-7)$

b) $\vec{y} = \vec{P_1P_2}$

$= P_2 - P_1$

$= (2,-3) - (0,-2)$

$= (2,-1)$