

MATH 244 - Second Quiz

1st Semester, 1442 H

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Name: _____ ID:____

Question I Let $\mathbf{u} = (-3,2,1)$, $\mathbf{v} = (4,7,-3)$ and $\mathbf{w} = (5,-1,2)$.

Find the components of

- (a) $-\mathbf{u} + (\mathbf{v} + \mathbf{4}\mathbf{w})$
- (b) The vector x which satisfies the equation u + v = 2x + w

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$$x$$
 which satisfies the equation $u + v = 2x + w$

$$a(x) = -(-3, 2, 1) + ((x, 7, -3) + ((5, -1, 2)))$$

$$= (3, -2, -1) + (((4, 7, -3) + ((20, -14, 8))))$$

$$= (3, -2, -1) + (((24, 7, -3) + ((20, -14, 8))))$$

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$$= (-3, 2, 1) + (((4, 7, -3) + ((20, -14, 8))))$$

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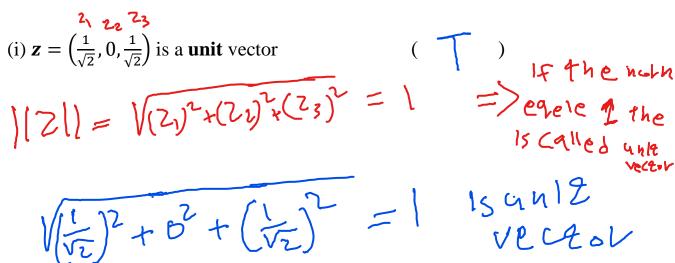
$$= (-3, 2, 1) + (((4, 7, -3) + ((20, -14, 8)))$$

$$= (-3, 2, 1) + (((4, 7, -3) + ((20, -14, 8)))$$

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$$= ((4, 7, -3, 1) + ((4, 7, -3, 1) + ((4, 7, -3, 1) + ((4, 7, -3, 1) + ((4, 7, -3, 1) + ((4, 7, -3, 1) + ((4, 7, -3, 1) + ((4, 7, -3, 1) + ((4, 7, -3, 1) + ((4, 7, -3, 1) + ((4, 7, -3, 1) + ((4, 7, -3, 1) + ((4, 7, -3, 1) +$$

Question II: Determine whether the following is true or false. Justify your answer.



(ii) If
$$u_1 = (1, -3, 4)$$
 and $u_2 = (0, 2, 5)$, then the distance between u_1 and u_2 is $d(u_1, u_2) = 6$

$$d(u_1, u_2) = ||u_1 - u_2|| = \sqrt{(-) + (-) + (-)}$$

$$\sqrt{(1-0)^2 + (-3-2)^2 + (u_2 - 5)^2} = 3\sqrt{5} = 5, \sqrt{9}$$

$$(iii) \text{ If } v_1 = (2, 0, -1) \text{ and } v_2 = (3, 1, -2), \text{ then the dot product}$$

$$v_1 \cdot v_2 = 8$$

$$\sqrt{(1-0)^2 + (-3-2)^2 + (u_2 - 5)^2} = 8$$

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$$\sqrt{(1-0)^2 + (u_2 - 5)$$

Good Luck ©