

$$T(u, y, z) = (u+y, u-3, z)$$

$$T(u+ve) = T(u) + T(ve)$$

$\rightarrow$  (رسانی کنید)

(شامل شو)

$$T(cu) = c \cdot T(u)$$

①

$$\rightarrow T(u+ve) = (u+ve+u+ve, u+ve-3, z_u+z_v)$$

~~$$T(u) + T(ve) = (u+ve, u-3, z_u) + (u+ve, -8, z_u+z_v)$$~~

$$(u+ve, z_v) = (u+ve+u+ve, u+ve-8, z_u+z_v)$$

$$\Rightarrow T(u+ve) \neq T(u) + T(ve) \quad \times \text{نحوه}$$

$$② T(cu) = (cu+cy, cu-3, cz)$$

~~$$T(c \cdot T(u)) = c \cdot (u+y, u-3, z) = (cu+cy, cu-3c, cz)$$~~

$$T(cu) \neq c \cdot T(u) \quad \times \text{نحوه}$$

$$a = (1, 1, 1) \quad \theta = 30^\circ$$

$$n_a = \left( \frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}} \right)$$

$$R_{ii} =$$

$$\begin{bmatrix} c + (1-c)u^2 & (1-c)uy + sz & (1-c)uz - sy \\ (1-c)uy - sz & c + (1-c)y^2 & (1-c)yz + sm \\ (1-c)uz + sy & (1-c)yz - sm & c + (1-c)z^2 \end{bmatrix}$$

$$\rightarrow R_{ii} = \cos(30) + (1 - \cos(30)) \frac{1}{3}$$

$$R_{12} = (1 - \cos(30)) \frac{1}{3} - \sin(30) \frac{1}{\sqrt{3}}$$

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$$R_{13} = (1 - \cos(30)) \frac{1}{3} + \sin(30) \frac{1}{\sqrt{3}}$$

$$R_{21} = (1 - \cos(30)) \frac{1}{3} + \sin(30) \frac{1}{\sqrt{3}} \quad R_{22} = \cos(30) + (1 - \cos(30)) \frac{1}{3}$$

$$R_{23} = (1 - \cos(30)) \frac{1}{\sqrt{3}} + \sin(30) \frac{1}{\sqrt{3}}$$

$$R_{32} = (1 - \cos(30)) \frac{1}{\sqrt{3}} + \sin(30) \frac{1}{\sqrt{3}} \quad R_{33} = \cos(30) + (1 - \cos(30)) \frac{1}{\sqrt{3}}$$

$$= \begin{bmatrix} 0,91 & -0,11 & 0,39 & 0 \\ 0,39 & 0,91 & -0,11 & 0 \\ -0,11 & 0,39 & 0,91 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

Q2 Transformation  $\hookrightarrow$  ~~Chiral~~  $\rightarrow$  ~~Optical~~  $\rightarrow$   $\leftarrow$  Chiral

اول بار Scale over میں سین سارہ زم و این در رام جم صد

$$\text{Scale} = \begin{bmatrix} 2 & 0 & 0 & 0 \\ 0 & -3 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} \quad \tilde{T} = \begin{bmatrix} 1 & 0 & 0 & 4 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & -9 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

$$\begin{matrix} \text{جواب} \\ - \\ \end{matrix} = \left[ \begin{array}{cccc} 2 & 0 & 0 & 8 \\ 0 & -3 & 0 & 0 \\ 0 & 0 & 1 & -9 \\ 0 & 0 & 0 & 1 \end{array} \right]$$

عمر چہوں  $\rightarrow A = (-4, -4, 0)$

(9 دل)

$$B = (4, -4, 0) \rightarrow m = 1,5$$

$$C = (4, 4, 0) \rightarrow j = 0,75$$

$$D = (-4, 4, 0) \rightarrow z = 1$$

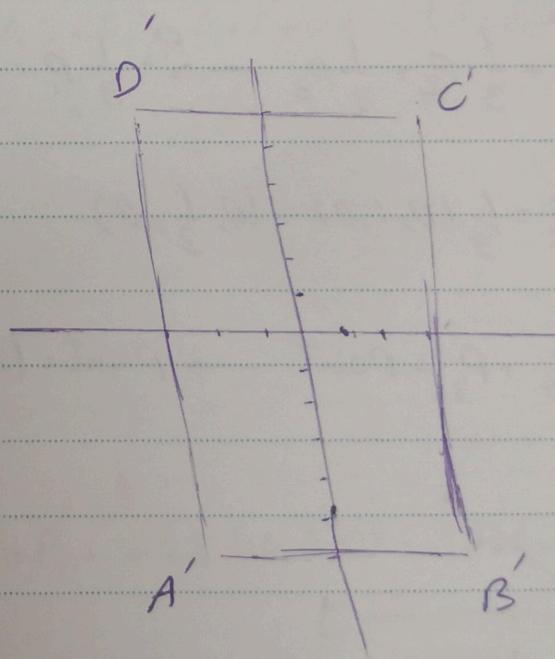
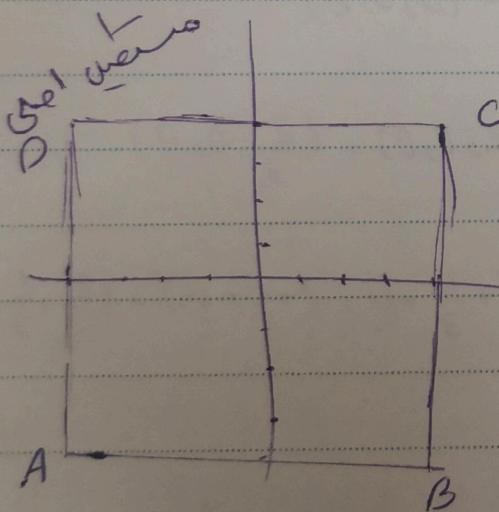
$$\rightarrow A' = (1,5 \times -4, 0,75 \times -4, 0) = (-6, -3, 0)$$

نگاشت

$$B' = (1,5 \times 4, 0,75 \times -4, 0) = (6, -3, 0)$$

$$C' = (1,5 \times 4, 0,75 \times 4, 0) = (6, 3, 0)$$

$$D' = (1,5 \times -4, 0,75 \times 4, 0) = (-6, 3, 0)$$



سے 15 دل میں ایک فریضی میں ایک مکعب کا حجم 1000 میٹر مربع میٹر میں ہے۔

..... جسے

..... ایک مکعب کا حجم 100 میٹر مربع میٹر میں ہے۔ اسے ایک مکعب کا حجم 100 میٹر مربع میٹر میں ہے۔

دیگر اسال سردار ~~ساری~~ ساری اسال از بین بود - من ندانم چون برادرستان رفته

جای جای رفته است و از مدعیت رفته است ~~سردار ساری اسال~~

~~من ندانم~~ برادرها ~~برادرانه~~ ~~برادرانه~~ ~~برادرانه~~ ~~برادرانه~~ ~~برادرانه~~ ~~برادرانه~~

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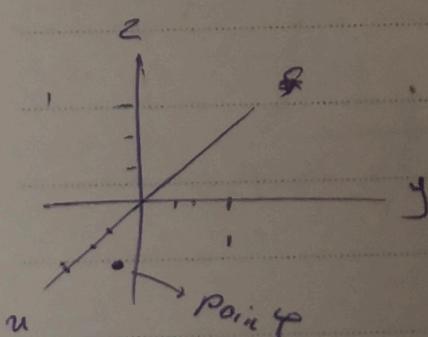
$$P_1 = (0, 0, 0) \quad P_2 = (0, 1, 0) \quad P_3 = (2, 0, 0)$$

سؤال (۱۵)

$$a) \frac{1}{3}P_1 + \frac{1}{3}P_2 + \frac{1}{3}P_3 \rightarrow P'_1 = \frac{1}{3}P_1 = \frac{1}{3}(0, 0, 0) = (0, 0, 0)$$

$$P'_2 = \frac{1}{3}P_2 = \frac{1}{3}(0, 1, 0) = (0, \frac{1}{3}, 0) \quad P'_3 = \frac{1}{3}P_3 = \frac{1}{3}(2, 0, 0) = (\frac{2}{3}, 0, 0)$$

$$\Rightarrow P'_1 + P'_2 + P'_3 = \text{Point} \rightarrow \text{Point} = (0+0+\frac{2}{3}, 0+\frac{1}{3}+0, 0+0+0) = (\frac{2}{3}, \frac{1}{3}, 0)$$



$$b) 0,7P_1 + 0,2P_2 + 0,1P_3 \rightarrow P'_1 = 0,7P_1 = 0,7(0, 0, 0) = (0, 0, 0)$$

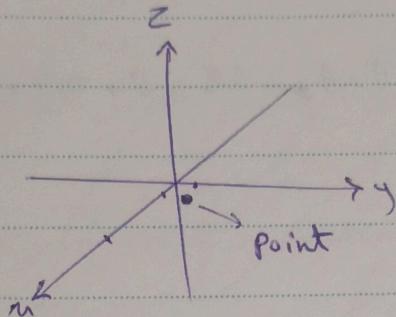
$$P'_2 = 0,2P_2 = 0,2(0, 1, 0) = (0, 0, 2) \quad P'_3 = 0,1P_3 = 0,1(2, 0, 0) = (0, 2, 0)$$

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~~Point~~  $P = P_1 + P_2 + P_3'$

(b)  $\rightarrow$   $(1, 0, 0)$ 

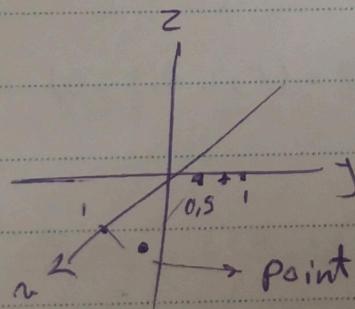
$\text{Point} = (0+0+0, 2, 0+0.2+0, 0+0+0) = (0, 2, 0.2, 0)$



$C) 0,0P_1 + 0,5P_2 + 0,5P_3 \rightarrow P' = 0,0(0,0,0) = (0,0,0)$

$P_2' = 0,5(0,1,0) = (0, 0, 0, 5) \quad P_3' = 0,5(2, 0, 0) = (1, 0, 0)$

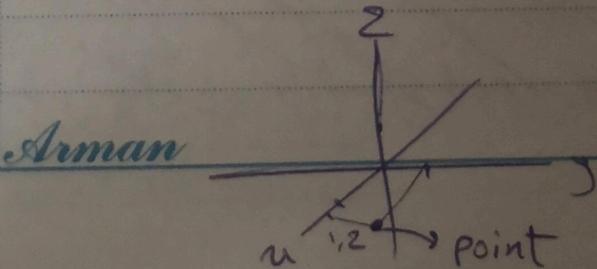
$\text{Point} = P_1' + P_2' + P_3' = (0+0+1, 0+0, 5+0, 0+0+0) = (1, 0, 0, 5)$



$d) -0,2P_1 + 0,6P_2 + 0,6P_3 \rightarrow P' = -0,2(0,0,0) = (0,0,0)$

$P_2' = 0,6(0,1,0) = (0, 0, 6) \quad P_3' = 0,6(2, 0, 0) = (1, 2, 0, 0)$

$\text{Point} = P_1' + P_2' + P_3' = (0+0+1, 2, 0+1+0, 0+0+0) = (1, 2, 1, 0)$



Subject:

Year:

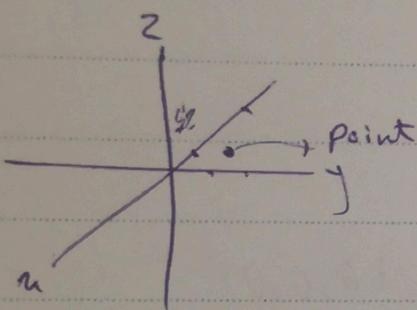
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e)  $0,6P_1 + 0,5P_2 - 0,1P_3 \rightarrow P'_1 = 0,6(0,0,0) = (0,0,0)$

$P'_2 = 0,5(0,1,0) = (0,0,5,0)$      $P'_3 = -0,1(2,0,0) = (-0,2,0,0)$

Point =  $P'_1 + P'_2 + P'_3 = (0+0-0,2, 0+0,5+0, 0+0+0) = (-0,2, 0,5, 0)$



f)  $0,8P_1 - 0,3P_2 + 0,5P_3 \rightarrow P'_1 = 0,8(0,0,0) = (0,0,0)$

$P'_2 = \cancel{0} - 0,3(0,1,0) = (0, -0,3, 0)$      $P'_3 = 0,5(2,0,0) = (1, 0, 0)$

Point =  $P'_1 + P'_2 + P'_3 = (0+0+1, 0-0,3+0, 0+0+0) = (1, -0,3, 0)$

