

$$\vec{BC} = -u + v$$

$$\begin{aligned}\vec{BD} &= \vec{BA} + \vec{AD} = -u + \frac{2}{3}u + \frac{1}{3}v \\ &= -\frac{1}{3}u + \frac{1}{3}v = \frac{1}{3}(-u + v) \\ &= \frac{1}{3}\vec{BC}\end{aligned}$$

↓

$$\vec{DC} = \frac{2}{3}\vec{BC}$$

: 1:2  $\Rightarrow$   $\vec{DC} = 2\vec{BC}$   $\vee$   $\vec{AD} = \frac{1}{2}\vec{BC}$

<u><math>x_i</math></u>	<u><math>y_i</math></u>	<u><math>z_i</math></u>
$-2 = \frac{1x + 2(-3)}{1+2}$	$3 = \frac{1y + 2 \cdot 2}{1+2}$	$1 = \frac{1z + 2 \cdot 2}{1+2}$
$-6 = x - 6$	$9 = y + 4$	$3 = z + 4$
$x = 0$	$y = 5$	$z = -1$

$$C(0, 5, -1)$$

$z+1$

$$\begin{aligned}\vec{AB} &= (-3-0, 2-2, 2+1) \\ &= (-3, 0, 3)\end{aligned}$$

$$\begin{aligned}\vec{BD} &= (-2+3, 3-2, 1-2) \\ &= (1, 1, -1)\end{aligned}$$

$$\begin{aligned}\vec{AD} &= (-3, 0, 3) + (1, 1, -1) \\ &= (-2, 1, 2)\end{aligned}$$

$$|\vec{AD}|^2 = 4 + 1 + 4 = 9$$

$$|\vec{AD}|^2 = \left(\frac{2}{3}\underline{u} + \frac{1}{3}\underline{v}\right) \cdot \left(\frac{2}{3}\underline{u} + \frac{1}{3}\underline{v}\right)$$

$$(*) = \frac{4}{9}\underline{u} \cdot \underline{u} + \frac{2}{9}\underline{u} \cdot \underline{v} + \frac{2}{9}\underline{u} \cdot \underline{v} + \frac{1}{9}\underline{v} \cdot \underline{v}$$

$$\underline{u} \cdot \underline{u} = (-3, 0, 3) \cdot (-3, 0, 3) = 9 + 0 + 9 = 18$$

$$\underline{v} = \vec{AC} = (x-0, y-2, z+1) = (x, y-2, z+1)$$

$$\vec{BC} = \frac{2}{3} \vec{BC}$$

$$\leftarrow \begin{matrix} (y/10) : \underline{2} \ 7 \ 3 \\ k \ 7 \ 3 \ 2 \ 3 \end{matrix}$$

$$l: (-3, 2, 2) + t \overbrace{(-2+3, 3-2, 1-2)}^{\vec{BD}} : \underline{BD} \ 10'$$
$$= (-3, 2, 2) + t(1, 1, -1)$$

$$t=3 \quad (1, 1) \quad |\vec{BC}| = 3|\vec{BD}| \quad - \underline{e} \ 10'$$

$$: C \ 7 \ 3 \ 2 \ 3$$

قوس 3 و 2:

$$C = B + 3\bar{B}D$$

$$C = D + 2\bar{B}D$$

قوس 3 و 1:

$$\vec{AD} = (-2, 1, 2)$$

$$\underline{u} = (-3, 0, 3)$$

$$\vec{AD} = \frac{2}{3}\underline{u} + \frac{1}{3}\underline{v}$$

$$(-2, 1, 2) = \frac{2}{3}(-3, 0, 3) + \frac{1}{3}\underline{v}$$

$$(-2, 1, 2) = (-2, 0, 2) + \frac{1}{3}\underline{v}$$

$$(-2, 1, 2) - (-2, 0, 2) = \frac{1}{3}\underline{v}$$

$$\frac{1}{3}\underline{v} = (0, 1, 0) \quad / \cdot 3$$

$$\underline{v} = (0, 3, 0)$$