a) $C = \left(\overset{x_c}{\frac{12}{5}}, \overset{y_c}{0}, \overset{z_c}{-\frac{12}{5}}\right)$

$D = \left(\overset{x_D}{5}, \overset{y_D}{0}, \overset{z_D}{-\frac{2}{3}}\right)$

$c' = ?, \quad D = ?$

$x \mapsto \frac{d}{z} \Rightarrow x_c' = \frac{-1}{\frac{-12}{5}} = \frac{5}{12}$

$y \mapsto \frac{dy}{z} \Rightarrow y_c' = \frac{-1 \cdot 0}{\frac{-12}{5}} = 0$

$z \mapsto z \quad z_c' = -\frac{12}{5}$

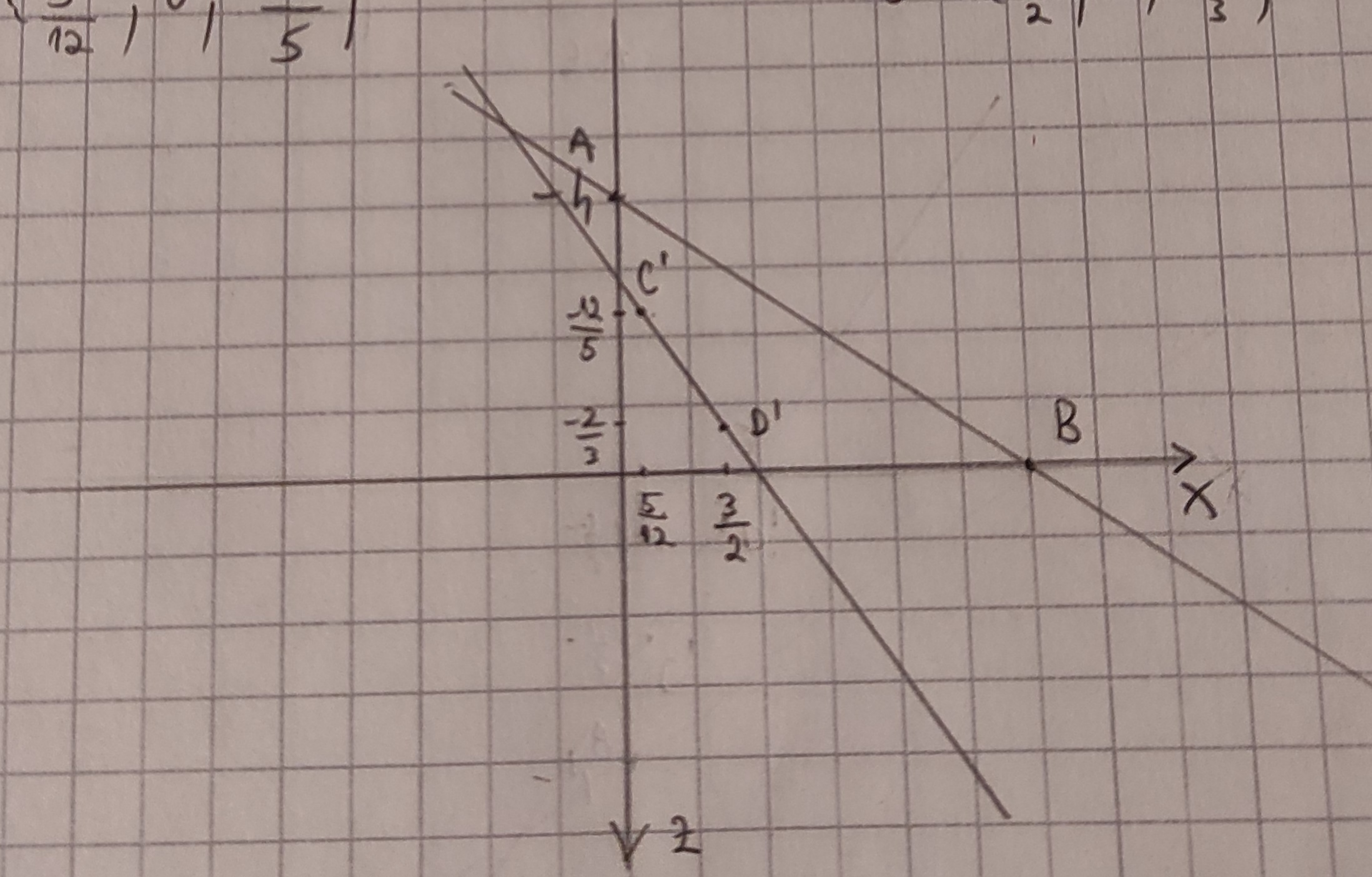
$c' = \left(\frac{5}{12}, 0, \frac{-12}{5}\right)$

$x_D' = \frac{-1}{\frac{-2}{3}} = \frac{3}{2}$

$y_D' = \frac{-1 \cdot 0}{\frac{-2}{3}} = 0$

$z_D' = \frac{-2}{3}$

$D' = \left(\frac{3}{2}, 0, \frac{-2}{3}\right)$



Pretpostavimo da su ta dva pravca paralelna. Kut između njih bi trebao onda biti 0°. Stoga iz formule za skalarni produkt ($\vec{a}\cdot\vec{b} = |\vec{a}|\cdot|\vec{b}|\cdot\cos\alpha$) dobivamo:

$\vec{a}\cdot\vec{b} = |\vec{a}|\cdot|\vec{b}|$ tj. $\overrightarrow{A'B'}\cdot\overrightarrow{C'D'} = |\overrightarrow{A'B'}|\cdot|\overrightarrow{C'D'}|$

$$\overrightarrow{A'B'} = B' - A' = (6, 0, 4)$$

$$\overrightarrow{C'D'} = D' - C' = \left(\frac{13}{12}, 0, \frac{26}{15}\right)$$

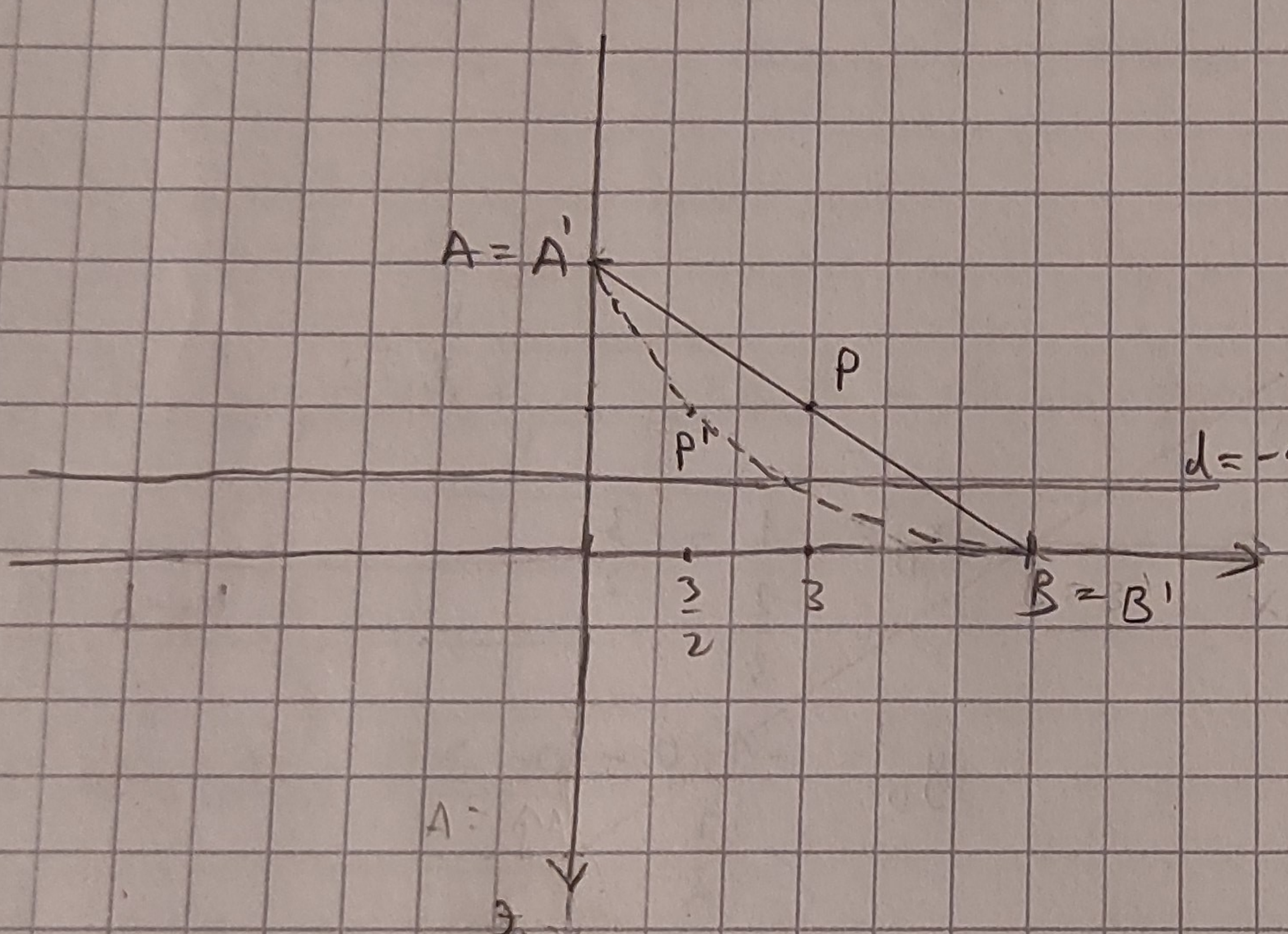
$$\overrightarrow{A'B'}\cdot\overrightarrow{C'D'} = |\overrightarrow{A'B'}|\cdot|\overrightarrow{C'D'}|$$

$$(6,0,4)\cdot\left(\frac{13}{12}, 0, \frac{26}{15}\right) = \sqrt{\left(\frac{13}{12}\right)^2+\left(\frac{26}{15}\right)^2}\cdot\sqrt{6^2+4^2}$$

$$6\cdot\frac{13}{12} + 4\cdot\frac{26}{15} = \frac{13\sqrt{89}}{60}\cdot 2\sqrt{13}$$

$$13.43 = 14.74 \; ↯$$

b)



$$x_P = \frac{x_A + x_B}{2} = \frac{0+6}{2} = 3$$

$$z_P = \frac{z_A + z_B}{2} = \frac{-4+0}{2} = -2$$

$$(x, y, z) \mapsto \left(\frac{-d\cdot x}{z}, \frac{-d\cdot y}{z}, z\right)$$

$$x_P' = \frac{-d\cdot x_P}{z} = \frac{-1\cdot 3}{-2} = \frac{3}{2}$$

$$z_P' = -2$$