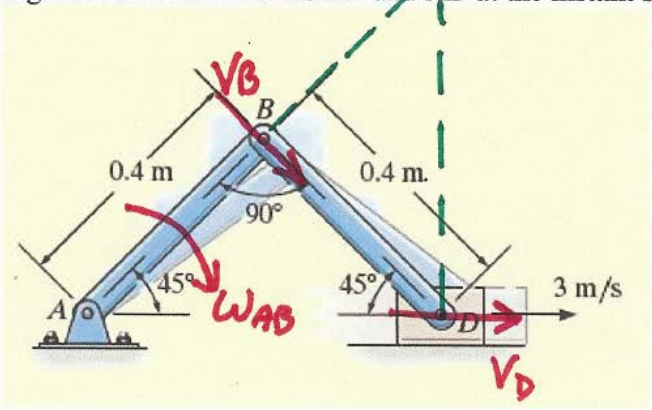
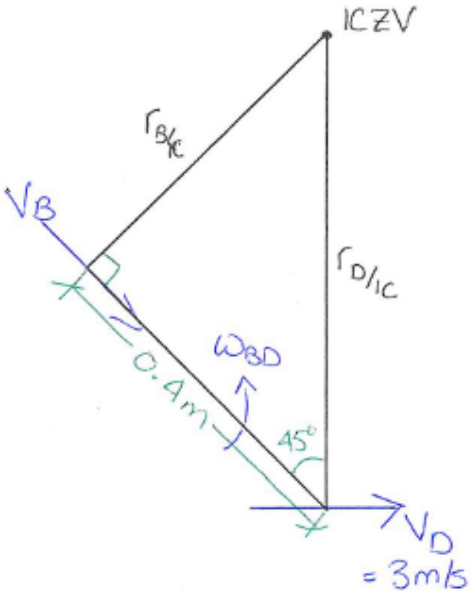
ICEV FOR BD

Problem 2. Block D moves with a speed of 3 m/s. Using the ICZV method, determine the angular velocities of links BD and AB at the instant shown.





From Geometry

$r_{B/IC} = 0.4 \tan 45° = 0.4\,m$

$r_{D/IC} = \frac{0.4}{\cos 45°} = 0.566\,m$

"pt. to body"

$\omega_{BD} = \frac{V_D}{r_{D/IC}} = \frac{3}{.566} = 5.30\,rps\,\circlearrowleft$

"body to pt."

$V_B = \omega_{BD} r_{B/IC} = (5.30)(0.4) = 2.12\,m/s \;\swarrow 45°$

"pt. to body"

$\omega_{AB} = \frac{V_B}{r_{B/A}} = \frac{2.12}{0.4} = 5.30\,rps\,\circlearrowright$

Answer: ω_{AB} = 5.30 rad/s CW ω_{BD} = 5.30 rad/s CCW