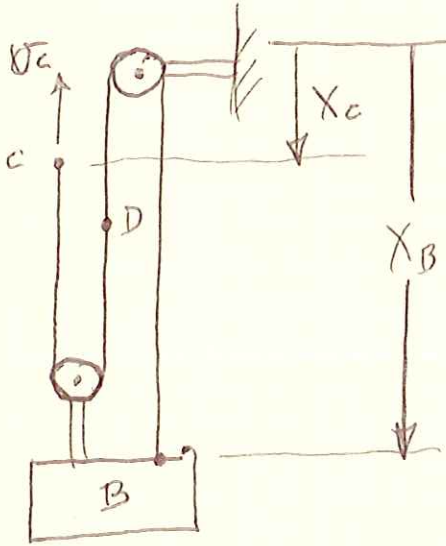


PROB. 11-47

$v_A = 6 \frac{m}{s} \leftarrow$, FIND $v_B, v_D, v_{C/D}$



$$v_C = v_A = -6 \frac{m}{s} \uparrow$$

LENGTH OF ROPE = CONSTANT

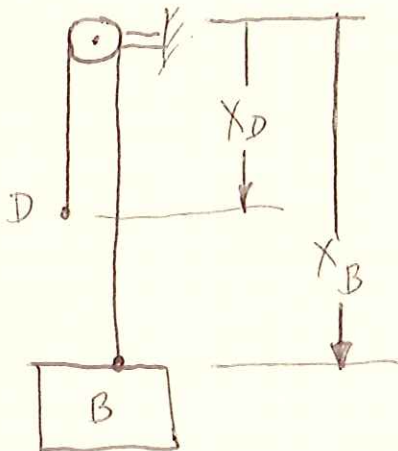
$$2X_B + (X_B - X_C) = \text{CONSTANT}$$

$$3X_B - X_C = \text{CONSTANT}$$

$$3 \frac{dX_B}{dt} - \frac{dX_C}{dt} = 0$$

$$3v_B - v_C = 0$$

$$v_B = \frac{1}{3} v_C = \frac{1}{3} \left(-6 \frac{m}{s} \right) = -2 \frac{m}{s} \uparrow$$



$$X_B + X_D = \text{CONSTANT}$$

$$\frac{dX_B}{dt} + \frac{dX_D}{dt} = 0$$

$$v_B + v_D = 0$$

$$v_D = -v_B = 2 \frac{m}{s} \uparrow$$

$$v_{C/D} = v_C - v_D = (-6) - (2) = -8 \frac{m}{s} \uparrow$$