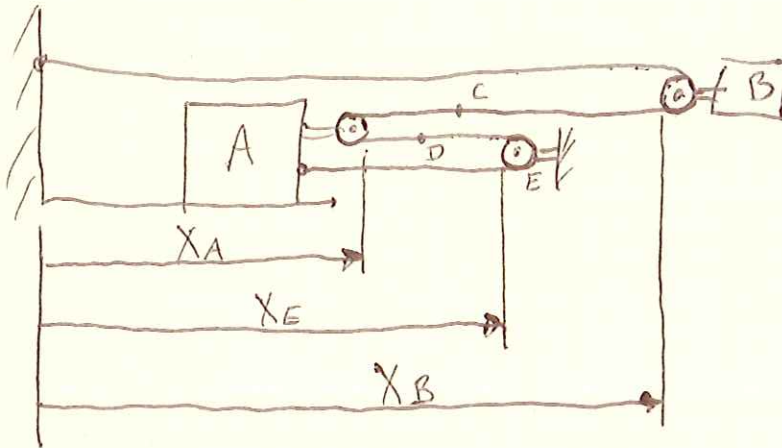


PROB. 11-53



$$v_B = 300 \frac{\text{mm}}{\text{s}}$$

FIND $v_A, v_C,$

$v_D, v_{C/A}$

LENGTH OF ROPE IS CONSTANT:

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

$$2X_B + 2X_E - 3X_A = \text{CONSTANT}$$

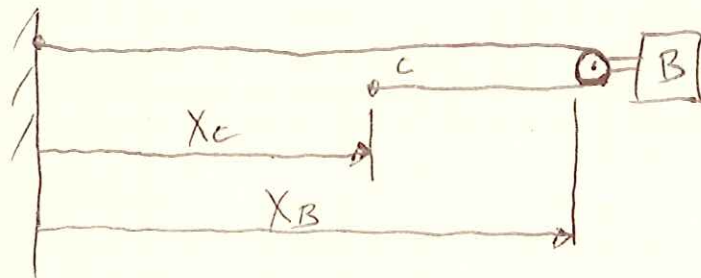
$$2v_B + 2v_E - 3v_A = 0$$

$$v_E = 0$$

$$2v_B - 3v_A = 0$$

$$v_A = \frac{2}{3} v_B = \frac{2}{3} \left(300 \frac{\text{mm}}{\text{s}} \right) = 200 \frac{\text{mm}}{\text{s}} \rightarrow$$

FIND v_C :



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

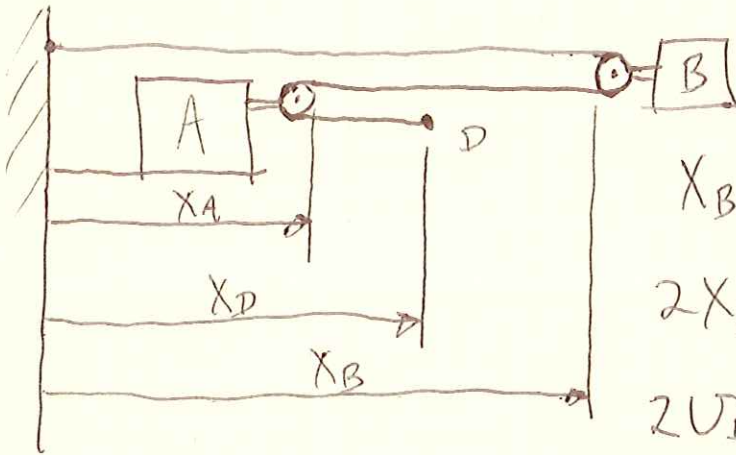
$$2X_B - X_C = \text{CONSTANT}$$

$$2v_B - v_C = 0$$

$$v_C = 2 \left(300 \frac{\text{mm}}{\text{s}} \right) = 600 \frac{\text{mm}}{\text{s}} \rightarrow$$

PROB. 11-53 CONT.

FIND U_D :



$$X_B + (X_B - X_A) + (X_D - X_A) = \text{CONST.}$$

$$2X_B - 2X_A + X_D = \text{CONSTANT}$$

$$2U_B - 2U_A + U_D = 0$$

$$U_D = 2U_A - 2U_B$$

$$U_D = 2\left(200 - 300 \frac{\text{mm}}{\text{s}}\right) = -200 \frac{\text{mm}}{\text{s}} \leftarrow$$

$$U_{C/A} = U_C - U_A = (600) - (200) = 400 \frac{\text{mm}}{\text{s}} \rightarrow$$