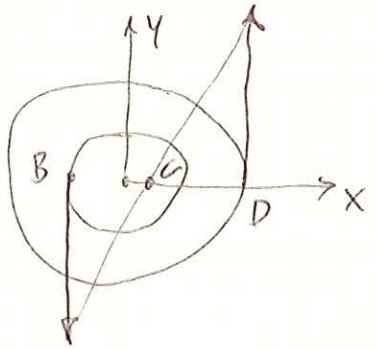
PROB. 15-79

$v_E = 160 \frac{mm}{sec}$, $v_F = 200 \frac{mm}{sec}$, $r_B = 30\ mm$, $r_D = 60\ mm$

a) FIND C



$$y - y_1 = m(x - x_1)$$

$$y = y_D + m(x - x_D)$$

$$m = \frac{y_D - y_B}{x_D - x_B} = \frac{(160) - (-200)}{(60) - (-30)}$$

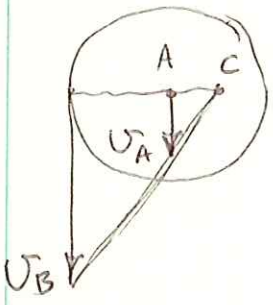
$$m = 4$$

$$y = (160) + (4)(x - 60), \quad y = 4x - 80$$

AT $y = 0$, $x =$ **$C = 20\ mm$**

b) FIND v_A

$$v_B = r_{CB}\,\omega, \quad \omega = \frac{v_B}{r_{CB}} = \frac{\left(200 \frac{mm}{sec}\right)}{(30 + 20\ mm)}$$



$$\omega = 4 \frac{rad}{sec}$$

$$v_A = r_C\,\omega = (20\ mm)\left(4 \frac{rad}{sec}\right) = 80 \frac{mm}{sec} \downarrow$$

c) $v_{BF} = 200 - 80 = 120 \frac{mm}{sec}$

$v_{DE} = 160 + 80 = 240 \frac{mm}{sec}$