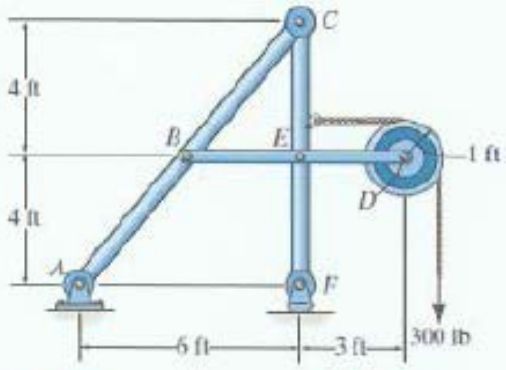
**Problem 4 - Frames II**

Determine the horizontal and vertical components of the force at *C* which member *ABC* exerts on member *CEF*.




FBD CEF

$C_y$, $C_x$, 4', 3', E, 300 lb, $E_x$, 4', F

NON CONCURRENT
3 EQNS, 5 UNKS

$\circlearrowleft \Sigma M_C = 0$

$-300(3) - E_x(4) = 0$

$E_x = -225$

$= 225$ lbs ← on CEF

FBD BED

$B_y$, $E_x$, 300 lbs, 3', 3', $E_y$, $B_x$

NON CONCURRENT
3 EQNS, 4 UNK

FBD D

300 lb, $D_y$, $D_x$, 300 lbs

$\rightarrow \Sigma F_x = 0$

$-300 - C_x - E_x = 0$

$C_x = -75$

$= 75$ lbs ← on CEF

CONCURRENT
2 EQNS, 2 UNKS

$D_y = 300$ lbs ↑ on PULLEY

$D_x = 300$ lbs → on PULLEY

$\circlearrowleft \Sigma M_B = 0$

$3'(E_y) + 6'(300) = 0 \quad E_y = -600$

$E_y = 600$ lbs ↑ on BED

$\rightarrow \Sigma F_x = 0$

$B_x - E_x - 300 = 0$

$B_x = 75 \rightarrow$ on BED

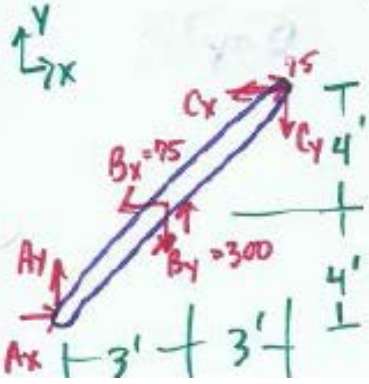
$\uparrow \Sigma F_y = 0$

$B_y - E_y - 300 = 0$

$B_y = -300 \quad B_y = 300$ lbs ↓ on BED

NOW FBD ABC

NON CONCURRENT




$\circlearrowleft \Sigma M_A = 0$

$-3(300) - 4(75) + 6C_y + 6(75) = 0$

$C_y = 100$ ↓ on ABC

SO

$C_y = 100$ lbs ↑

$C_x = 75$ lbs ←

on CEF