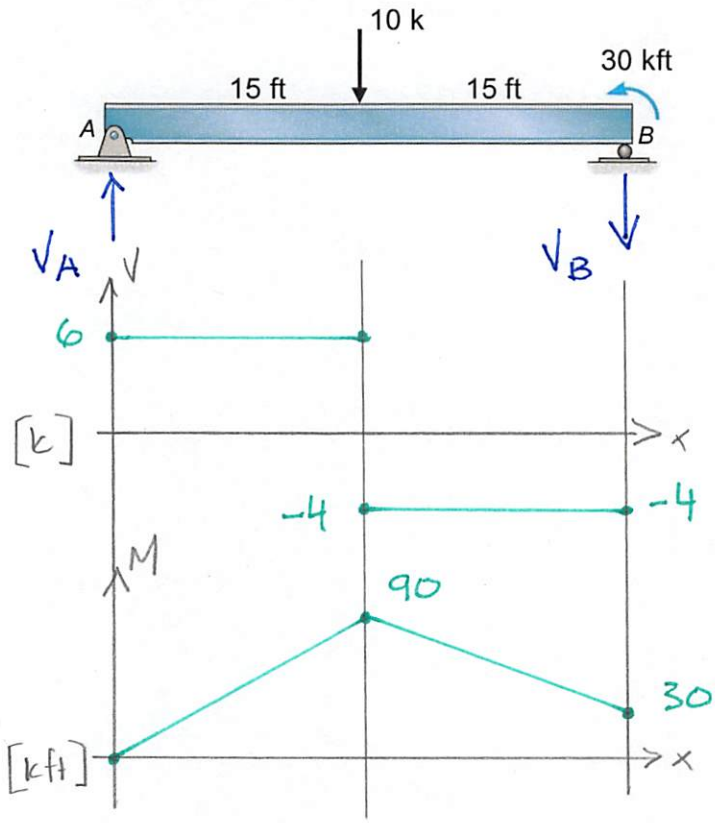
CIVL 3121 Quiz #7 F26 Name: _____

Use the conjugate beam method to determine the slope at *A* for the beam shown below. Assume *EI* is constant.

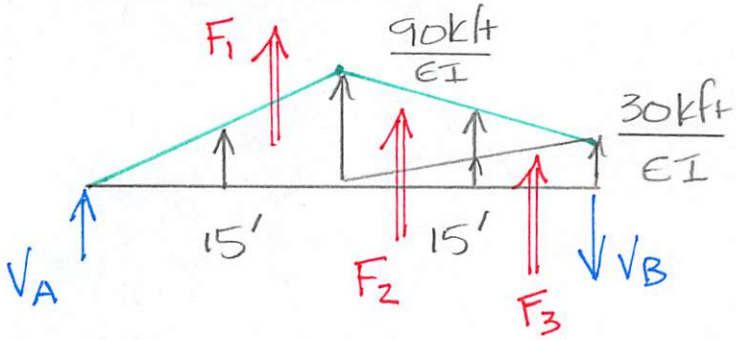


$\circlearrowleft + \sum M_B = 0 = 10^k(15') + 30\,kft - V_A(30')$

$V_A = 6k$

$+\uparrow \sum F_y = 0 = V_A - V_B - 10^k \quad V_B = -4^k$

CONJUGATE BEAM



$F_1 = \frac{1}{2}(15')\frac{90kft}{EI} = \frac{675kft}{EI}$

$F_2 = \frac{1}{2}(15')\frac{90kft}{EI} = \frac{675kft}{EI}$

$F_3 = \frac{1}{2}(15')\frac{30kft}{EI} = \frac{225kft}{EI}$

$\circlearrowleft + \sum M_B = 0 = -F_1(15 + \frac{1}{3}(15')) - F_2(\frac{2}{3})15' - F_3(\frac{1}{3})15' - V_A(30')$

$V_A = -\frac{712.5\,kft^2}{2EI}$