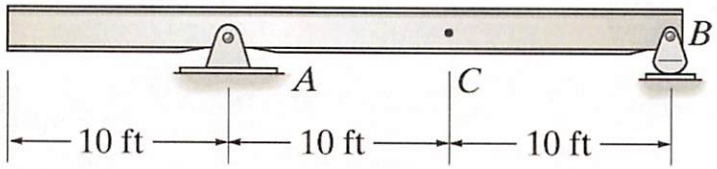
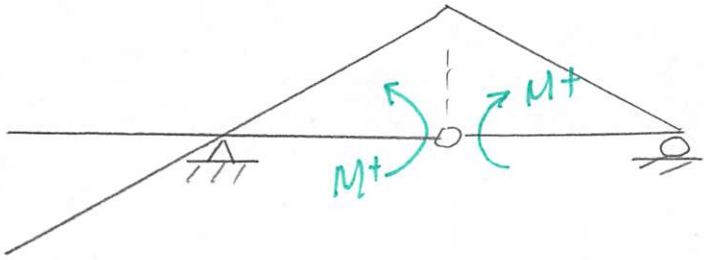
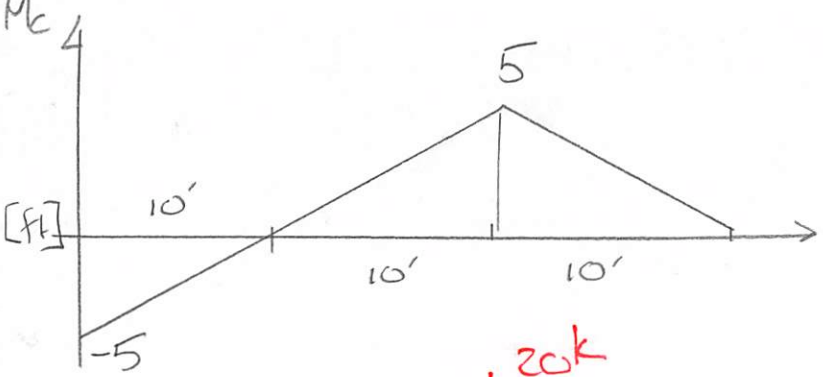
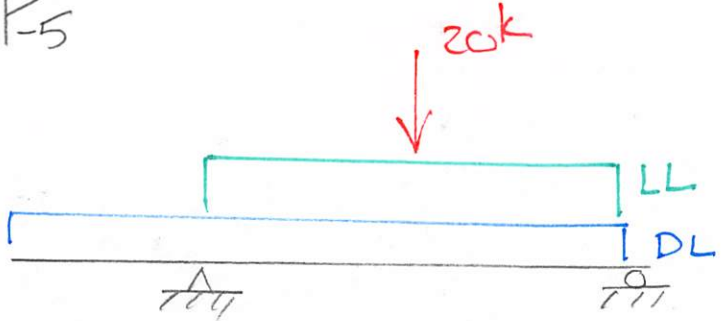
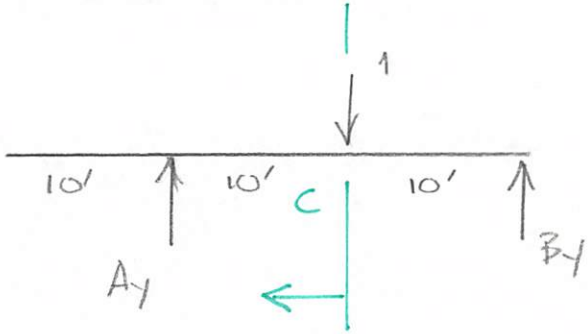
Example 6b-3: The beam supports a uniform dead load of 300 lb/ft, a uniform live load of 600 lb/ft, and a single live concentrated force of 20 k. Determine (a) the maximum positive moment at *C* and (b) the maximum positive shear at *C*.







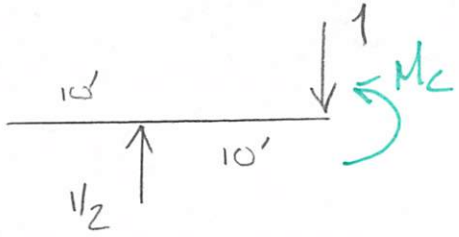




$\circlearrowleft + \sum M_B = 0$

$= 1(10') - A_y(20')$

$A_y = 1/2$



$\circlearrowleft + \sum M_{cut} = 0$

$= M_c - 1/2(10')$

$M_c = 5 ft$

(*) CONCENTRATED FORCE

$20k(5ft) = 100 kft$

(*) UNIFORM DEAD LOAD

$0.3 k/ft \left(\frac{1}{2}\right)\left[10'(-5ft) + 20'(5ft)\right] = 7.5 kft$

(*) UNIFORM LIVE LOAD

$0.6 k/ft \left(\frac{1}{2}\right)\left[20'(5')\right] = 30 kft$

$M_c = 137.5 kft$