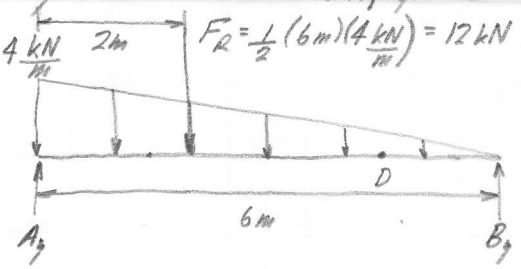
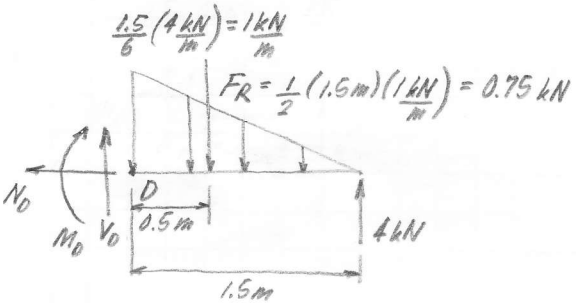
K. Dennehy Ch. 1, Pgs. 17-21: 1-9, 1-13, 1-14, 1-27 HW

(1-9)



$\Sigma M_A = 0, \; -(12kN)(2m) + B_y(6m) = 0$

$B_y = 4kN$



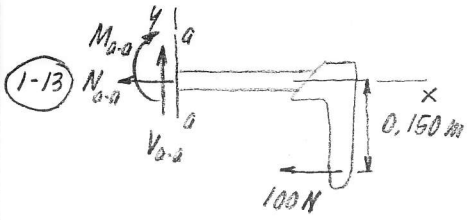
$\Sigma F_x = 0, \; \boxed{N_D = 0}$

$\Sigma F_y = 0, \; V_D - 0.75kN + 4kN = 0, \; \boxed{V_D = -3.25kN}$

$\Sigma M_D = 0, \; -M_D - (0.75kN)(0.5m) + (4kN)(1.5m) = 0$

$\boxed{M_D = 5.625 \; kN\text{-}m}$

(1-13)



$\Sigma F_x = 0, \; -N_{a-a} - 100N = 0$

$\boxed{N_{a-a} = -100N}$

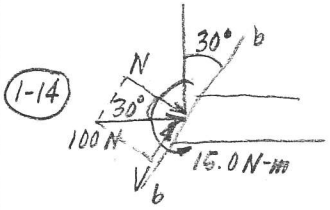
$\Sigma F_y = 0, \; -V_{a-a} = 0$

$\boxed{V_{a-a} = 0}$

$\curvearrowleft + \Sigma M_{a-a} = 0, \; -M_{a-a} - (100N)(0.150m) = 0$

$\boxed{M_{a-a} = -15.0 \; N\text{-}m}$

(1-14)



$N = (100N)\cos 30°$

$= 86.6N$

$\boxed{N_{b-b} = -86.6N}$

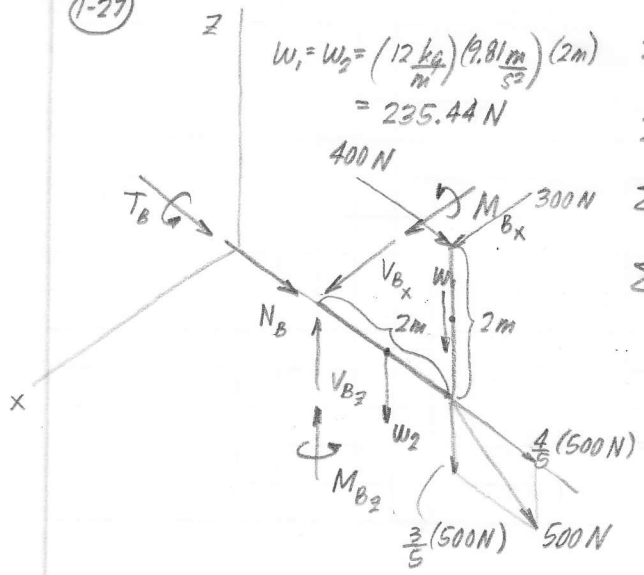
$V = (100N)\sin 30°$

$= 50.0N$

$\boxed{V_{b-b} = 50.0N}$

$\boxed{M_{b-b} = -15.0 \; N\text{-}m}$

(1-27)



$W_1 = W_2 = (12\frac{kg}{m})(9.81\frac{m}{s^2})(2m)$

$= 235.44N$

$\Sigma F_x = 0, \; V_{B_x} + 300N = 0, \; \boxed{V_{B_x} = -300N}$

$\Sigma F_y = 0, \; N_B + 400N + 400N = 0, \; \boxed{N_B = -800N}$

$\Sigma F_z = 0, \; V_{B_z} - 300N - 2(235.44N) = 0, \; \boxed{V_{B_z} = 770.88N \text{ or } 771N}$

$\Sigma (M_B)_x = 0, \; M_{B_x} - (400N)(2m) - (300N)(2m) - (235.44N)(2m) - (235.44N)(1m) = 0, \; \boxed{M_{B_x} = 2{,}106.32 \; N\text{-}m \text{ or } 2.11 \; kN\text{-}m}$

$\Sigma (M_B)_y = 0, \; T_B + (300N)(2m) = 0, \; \boxed{T_B = -600 \; N\text{-}m}$

$\Sigma (M_B)_z = 0, \; M_{B_z} - (300N)(2m) = 0, \; \boxed{M_{B_z} = 600 \; N\text{-}m}$