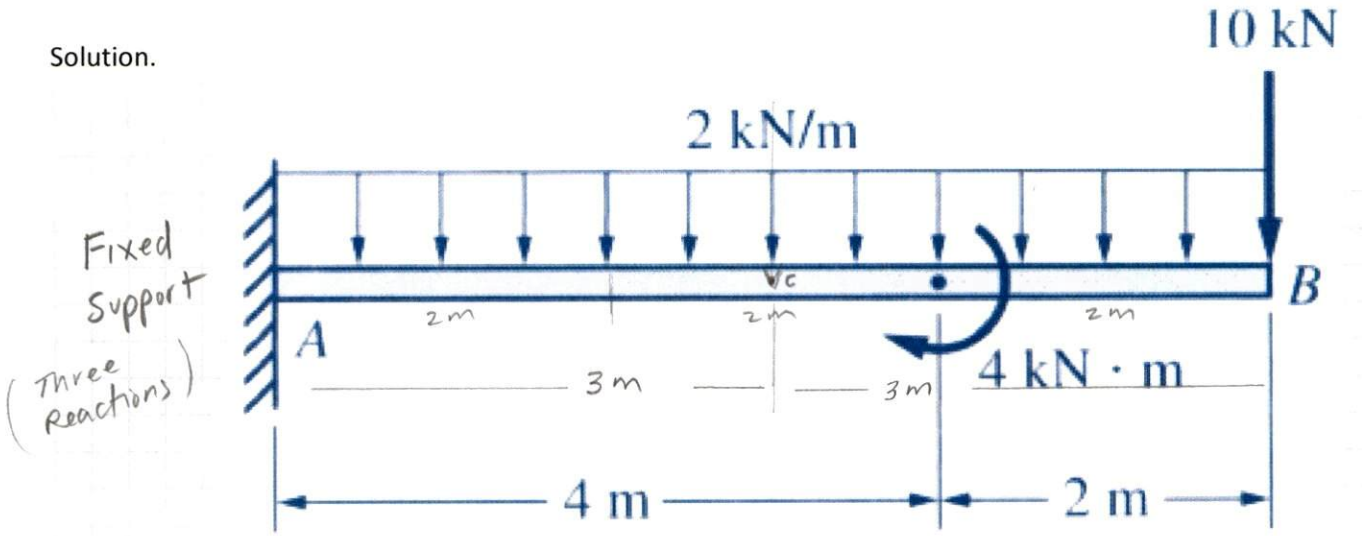
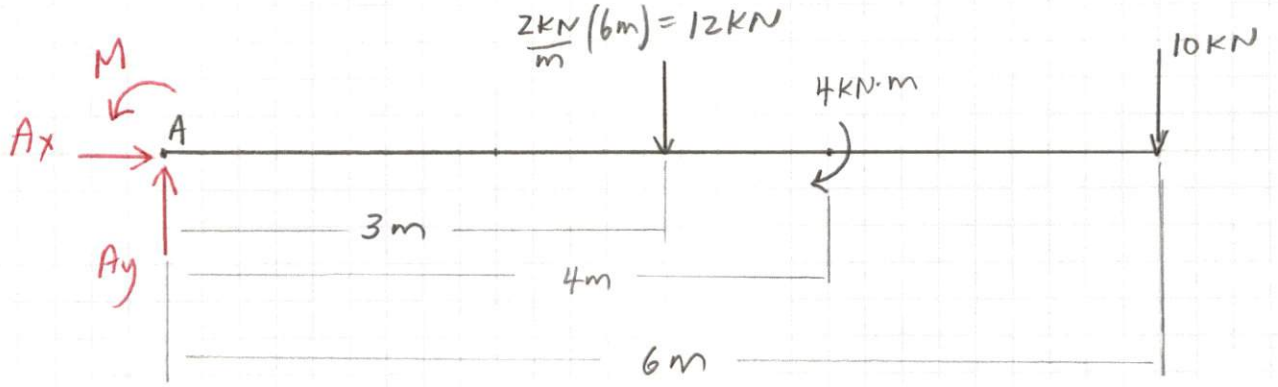
3-48

Refer to Fig. P3-48. Determine the reaction components at the fixed support of the cantilever beam due to the loads shown.

Solution.





FBD

Equilibrium Equations

ccw +M ↺

cw −M ↻

$[\Sigma F_x = 0]$ $A_x = 0$

$[\Sigma F_y = 0]$ $A_y - 12\,kN - 10\,kN = 0$

$A_y = 22\,kN \uparrow$

$[\Sigma M_A = 0]$ $M - 12\,kN(3m) - 4\,kN\cdot m - 10\,kN(6m) = 0$

$M = 36\,kN\cdot m + 4\,kN\cdot m + 60\,kN\cdot m$

$M = 100\,kN\cdot m \circlearrowleft$