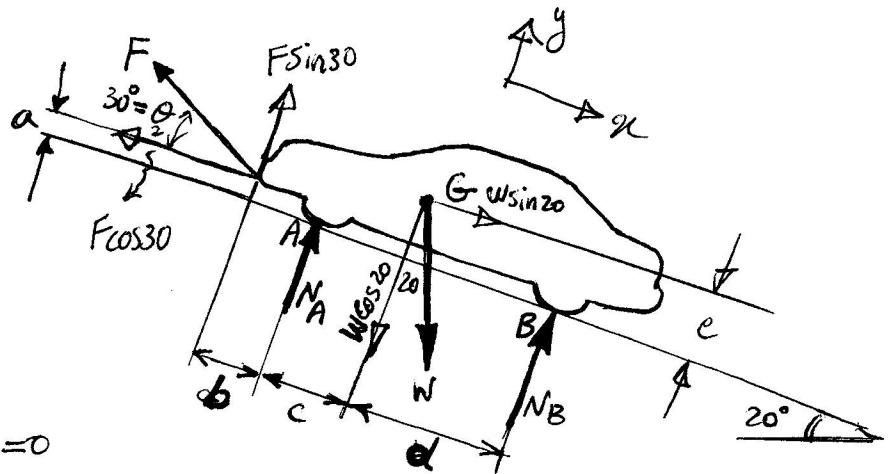


5-16

Given: $M = 5Mg$, $a = 0.3\text{m}$, $b = 0.75\text{m}$, $c = 1\text{m}$, $d = 1.5\text{m}$, $e = 0.6\text{m}$

$$W = Mg = 5mg(10^3) \times 9.8 = 49050\text{N} \text{ or } 49.05\text{ kN}$$

Consider the x - y coordinates as shown. This will make the solution easier.



$$\textcircled{1} \sum F_x = 0$$

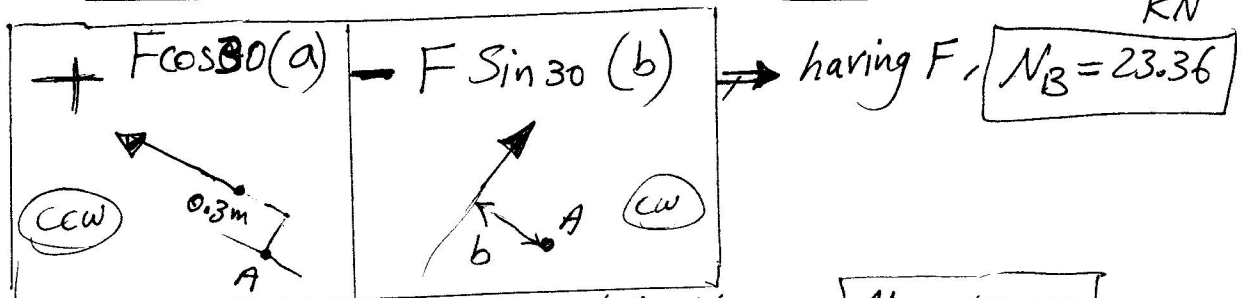
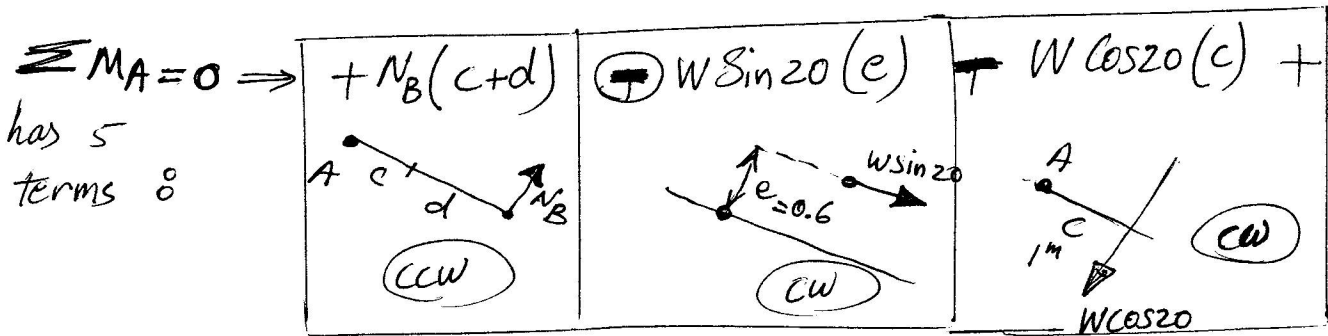
$$-F \cos 30 + W \sin 20 = 0$$

$$-F \cos 30 + 49.05 \sin 20 = 0 \Rightarrow F = 19.37 \text{ kN}$$

$$\textcircled{2} \sum F_y = 0 \Rightarrow N_A + N_B + F \sin 30 - W \cos 20 = 0$$

this will not give any result.

$\textcircled{3} \sum M_A = 0$ Always consider the moment about a point from which at least one unknown passes. $\sum M_G = 0$ will be difficult to solve.



Now use eq (2) or $\sum F_y = 0$ and calculate $N_A \rightarrow N_A = 13.05$ kN