Final Review

TYPO #31 - change "weight" to 2 kg mass

Unit 8 - Rotation

(22) net $F = 0$ and net $\tau = 0$

(23) $r = 1$ m $\quad \tau = Fr = (200)(1) =$ **200 Nm CCW**

(24) $\tau = Fr\sin\theta = (25)(.25)\sin 30° =$ **3.13 Nm**

(25) 

net $\tau = 40(1.3) - 24(0.6) - 16(1.5)$

net $\tau =$ **13.6 Nm CCW**

(26) ~~32(2.5)~~ net $\tau = -125(.25) + 25(.75) =$ **12.5 Nm C**

(27) $32(2.5) = m_{DAD}(\text{[illegible]}) \rightarrow m_{DAD} =$ **80.0 kg**

(28) net $\tau = 0 \quad -3(15) + 4(25) + 2r = 0 \rightarrow r = 27.5$

2N should be placed **27.5 cm right of the middle**

(29) $\tau_{cw} = \tau_{ccw}$

$85(9.8)(4) + 20(9.8)(6) = F_2(11)$

$F_2 = 410$ N

$F_{up} = F_{down}$

$F_1 + 410 = 85(9.8) + 20(9.8$

$F_1 = 619$ N

(30) $\tau_{cw} = \tau_{ccw}$

$20{,}000(20) + 15{,}000(60) + 12{,}000(100) = 150F_2$

$F_2 = 16{,}667$ N

$F_{up} = F_{dow}$

$F_1 + 16{,}667 = 47{,}0$

$F_1 = 30{,}333$

(31)

F	r	τ
(0.35)(9.8)=3.43	50	171.5
2(9.8)=19.6	80	1568
23.03		1739.5

$CG = \frac{1739.5}{23.03} =$ **75.5 cm**

(32)

F	r	τ
500	3.5	1750
100	2	200
75	4	300
90	6	540
765 N		2790 Nm

$CG = \frac{2790}{765} =$ **3.65 m**