P #20

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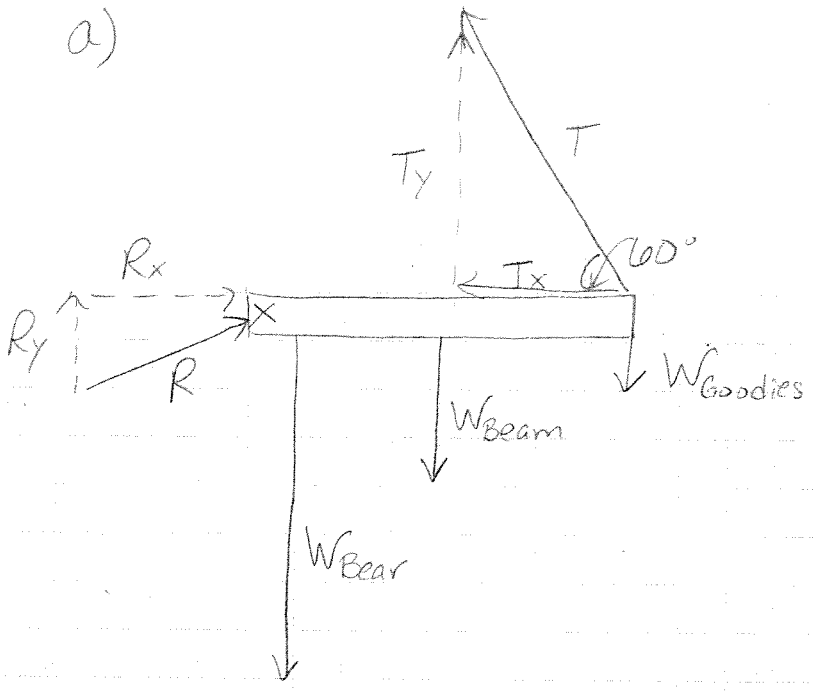
$W_{Bear} = 700\ N$
$W_{Beam} = 200\ N$
$W_{Goodies} = 80\ N$

a)



b) $r_{Bear} = 1.00\ m$
$r_{Beam} = 3.00\ m$
$r_{Goodies} = 6.00\ m$

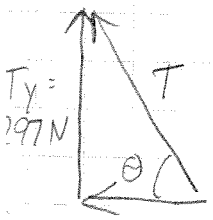
(Put axis of rotation @ left end)

$\Sigma\tau$: $\tau_{Bear} + \tau_{Beam} + \tau_{Goodies} = \tau_{R_y} + \tau_{T_y}$

$W_{Bear} \cdot r_{Bear} + W_{Beam} \cdot r_{Beam} + W_{Goodies} \cdot r_{Goodies} = R_y \cdot 0 + T_y \cdot (6.0\ m)$

$(700\ N)(1.0\ m) + (200\ N)(3.0\ m) + (80\ N)(6.0\ m) = 0 + T_y \cdot (6.0\ m$

$T_y = 297\ N$



$T_y = T \cdot \sin\theta$

$(297\ N) = T \cdot \sin 60°$

$\boxed{T = 343\ N}$