DTY Tutoring, inc.
Email: dtytutoring@gmail.com
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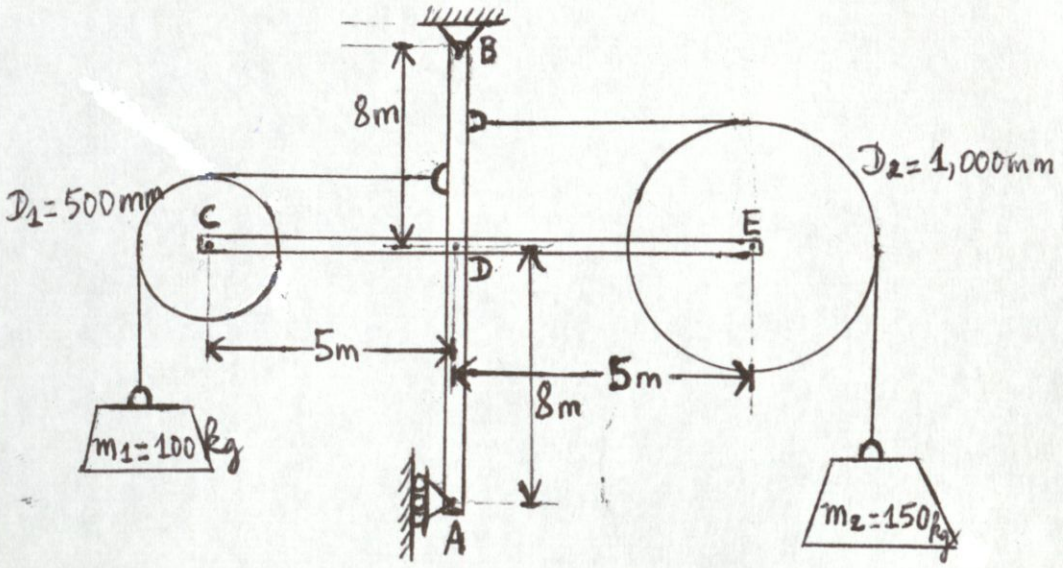
Date: 15th May 2019



FBD Pulley C

$T_3 = T_1 = 0.981kN$

$+\rightarrow \Sigma F_x = 0$; $C_x + T_3 = 0$

$C_x = -T_3 = -0.981kN$

$= 0.981kN \leftarrow$

$+\uparrow \Sigma F_y = 0$; $C_y = T_1 = 0.981kN$

$0.981kN = T_1$

FBD Pulley E

$T_4 = T_2$

E_x E

E_y

T_2

FBD m_1

T_1

$m_1 = 100kg$

$+\uparrow \Sigma F_y = 0$

$T_1 = W_1 = 0.981kN$

$W_1 = m_1 g$

$= (100kg)(9.81 \frac{m}{s^2})$

$= 981 N$

$W_1 = 0.981 kN$

FBD m_2

T_2

$m_2 = 150kg$

$+\uparrow \Sigma F_y = 0$;

$T_2 = W_2 = 1.4715kN$

$W_2 = m_2 g = (150kg)(9.81 \frac{m}{s^2})$

$= 1.4715 kN$

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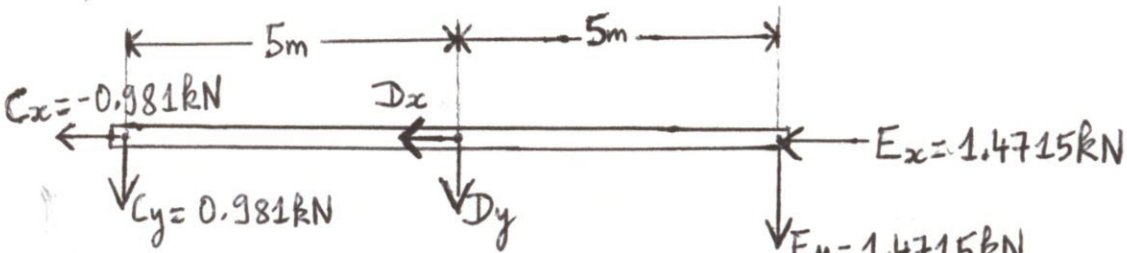
FBD Member CDE



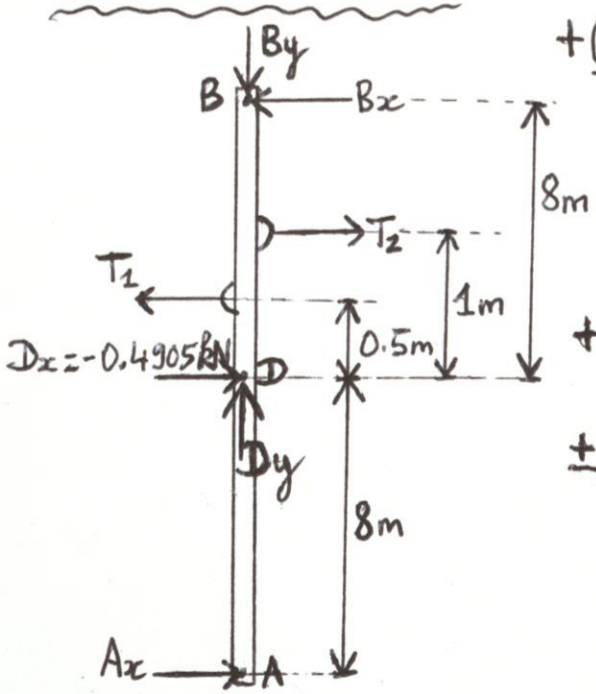
$\pm\leftarrow \sum F_x = 0 \Rightarrow C_x + D_x + E_x = 0$

$D_x = -C_x - E_x = -(-0.981) - (1.4715) = -0.4905\,kN = 0.4905\,kN \rightarrow$

$+\downarrow \sum F_y = 0 \Rightarrow C_y + D_y + E_y = 0$

$D_y = -E_y - C_y = -(1.4715) - (0.981) = -2.4525\,kN = 2.4525\,kN \uparrow$

FBD Member ABD



$+\circlearrowleft \sum M_A = 0;$

$(-D_x)(8m) + (T_1)(8.5m) + (-T_2)(9m) + (B_x)(16m) = 0$

$-(-0.4905kN)(8m) + (0.981kN)(8.5m) + (-1.4715kN)(9m) + (B_x)(16m) = 0$

$B_x = 0.0613125\,kN$

$+\uparrow \sum F_y = 0;\ D_y - B_y = 0$

$B_y = D_y = -2.4525\,kN = 2.4525\,kN \uparrow$

$\pm\rightarrow \sum F_x = 0;$

$A_x + D_x - T_1 + T_2 - B_x = 0$

$A_x = B_x + T_1 - T_2 - D_x$

$= (0.0613125) + (0.981) - (1.4715) - (-0.4905)$

$A_x = 0.0613125\,kN$