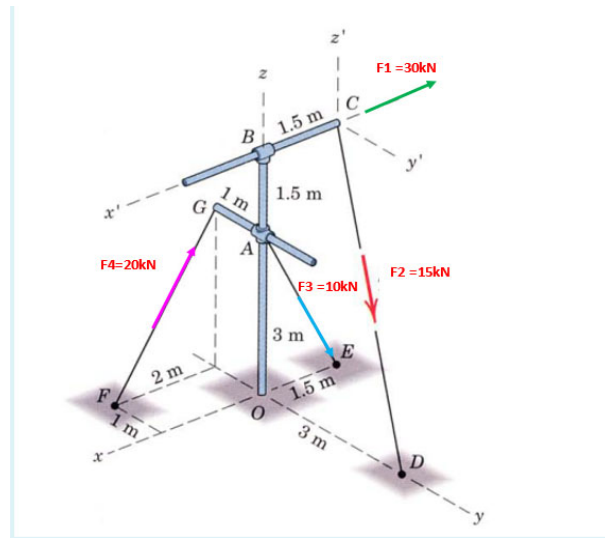


1C-2021_Parcialito Temas 1, 2 y 3 - Resolución Ej. 1 - TEMA 2

TEMA 2



Ángulos de los cosenos directores

	$ F $ [kN]	α ($\angle X$)	β ($\angle Y$)	γ ($\angle Z$)
[F1] =	30	180	90	90
[F2] =	15	63	27	143
[F3] =	10	117	90	153
[F4] =	20	124	90	-34

Coordenadas de los puntos

	x [m]	y [m]	z [m]
[O] =	0	0	0
[A] =	0	0	3
[B] =	0	0	4.5
[C] =	-1.5	0	4.5
[D] =	0	3	0
[E] =	-1.5	0	0
[F] =	2	-1	0
[G] =	0	-1	3

$$|ED| = d_{xy_2} = 3.35$$

Verificación del módulo

	F_{i_x} [kN]	F_{i_y} [kN]	F_{i_z} [kN]	
[F1] =	-30.0	0.0	0.0	30 OK
[F2] =	4.0	8.0	-12.0	15 OK
[F3] =	-4.5	0.0	-8.9	10 OK
[F4] =	-11.1	0.0	16.6	20 OK
[Rtot_O] =	-41.56	8.02	-4.33	kN

Cálculo de los momentos de las fuerzas respecto del punto O

$$MO_i = [di] \times [F_i]$$

	x [m]	y [m]	z [m]
OC=[C]-[O]=	-1.5	0	4.5
OD=[D]-[O]=	0	3	0
OE=[E]-[O]=	-1.5	0	0
OF=[F]-[O]=	2	-1	0

	i	j	k	
MO_F1	0.0	-135	0.0	kN.m
OC	-1.5	0.0	4.5	
F1	-30.0	0.0	0.0	

	i	j	k	
MO_F2	-36.1	0	-12.0	kN.m
OD	0.0	3.0	0.0	
F2	4.0	8.0	-12.0	

	i	j	k	
MO_F3	0.0	-13.4	0.0	kN.m
OE	-1.5	0.0	0.0	
F3	-4.5	0.0	-8.9	

	i	j	k	
MO_F4	-16.6	-33.3	-11.1	kN.m
OF	2.0	-1.0	0.0	
F4	-11.1	0.0	16.6	

	M_{i_x} [kN.m]	M_{i_y} [kN.m]	M_{i_z} [kN.m]	
MO_F1	0.0	-135.0	0.0	
MO_F2	-36.1	0.0	-12.0	
MO_F3	0.0	-13.4	0.0	
MO_F4	-16.6	-33.3	-11.1	
[Mtot_O] =	-52.72	-181.70	-23.12	kN.m