M R

Ahmed Mahdy

فيزياء	استاتيكا
دوائر كهربية	الكـــترونيات
ميكانيكا الانشائات	هيدروليكا

مدرس خصوصي

اونلاين حضوري

يحصل الطالب علي

- مقاطع فيديوهات لشرح المقرر بشكل وافي
- ملخص للمادة Pdf للمذكرة والمراجعة
- محاضرات مباشرة علي برنامج زووم
- لمناقشة الأجزاء الغير مفهومة
- تواصل مستمر مع معلم المادة

للتواصل

0567630097

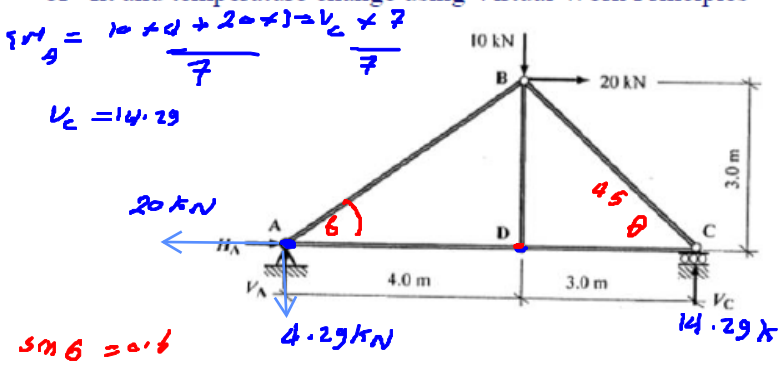
0565657741

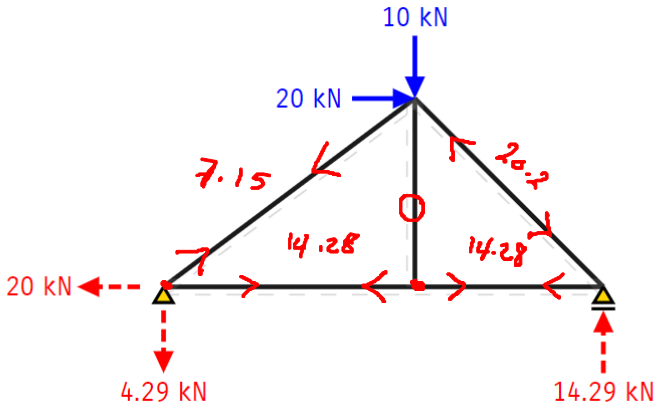
Example No (5)

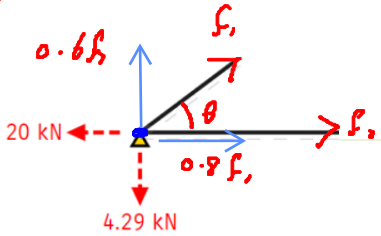
Consider the truss indicated below determine the vertical deflection at joint D assuming the existing loading and member BC is too short by 2mm, member CD is too longer by 1.5mm and that members AD and CD are both subject to an increase in temperature of 5^0C.

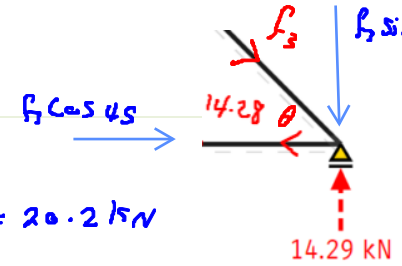
Assume $\alpha = 12.0 \times 10^{-6}/^{\circ}C$ and $AE = 100 \times 10^3$ kN.

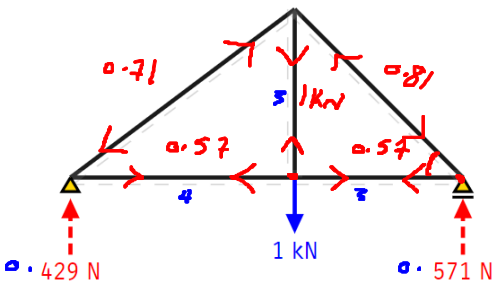
Determine the vertical deflection at joint D due to combined loading, lack-of –fit and temperature change using Virtual Work Principles

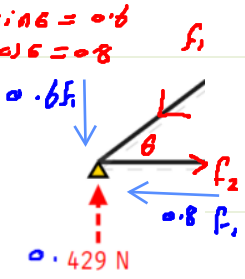


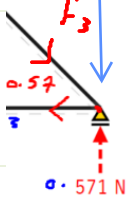












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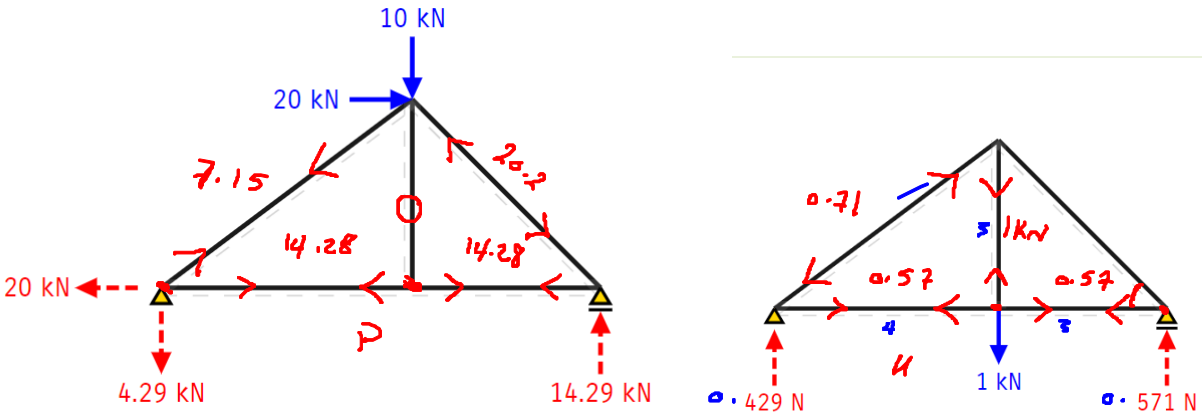

Member	Length (mm)	AE (kN)	P-force (kN)	PL/AE (mm)	Δ_L (mm)	Δ_T (mm)	u	$(PL/AE + \Delta_L + \Delta_T) \times u$ (mm)
AB	5000	100×10^3	+ 7.15	+ 0.36	0	0	– 0.71	– 0.26
BC	4243	100×10^3	– 20.20	– 0.86	– 2.0	0	– 0.81	+ 2.32
AD	4000	100×10^3	+ 14.29	+ 0.57	0	+ 0.24	+ 0.57	+ 0.46
CD	3000	100×10^3	+ 14.29	+ 0.43	+ 1.5	+ 0.18	+ 0.57	+ 1.20
BD	3000	100×10^3	0	0	0	0	1.0	0
								$\Sigma = + 3.72$

The vertical deflection at joint D due to combined loading, lack-of-fit and temperature change is given by:

$$\delta_{V,D} = \sum \left(\frac{PL}{AE} + \Delta_l + \Delta_t \right) \times u = + 3.72 \text{ mm} \downarrow$$