

# M R

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## مدرس خصوصي

حضورى

اونلاين

بحصل الطالب علي

مقاطع فيديو هات لشرح المقرر بشكل وافي

ملخص للمادة Pdf للمذكرة واطراجعة

محاضرات مباشرة علي برنامج زووم

مناقشة الأجزاء الغير مفهومة

تواصل مستمر مع معلم المادة

للتواصل

0567630097

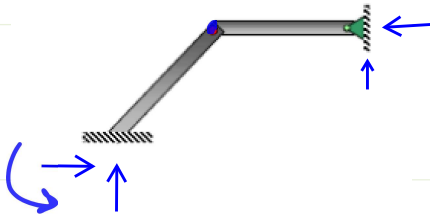
0565657741

فيزياء	استاتيكا
دوائر كهربية	الالكترونيات
ميكانيكا الانشآت	هيدروليكا

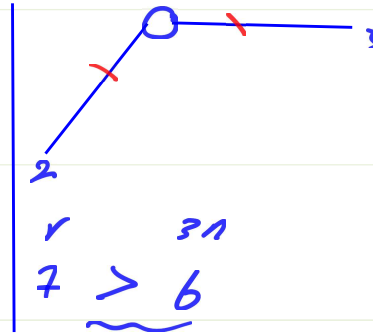


### Example 2-2

Classify each of the pin-connected structures shown in figure below as statically determinate or statically indeterminate. If statically are subjected to arbitrary external loadings that are assumed to be known and can act anywhere on the structures.



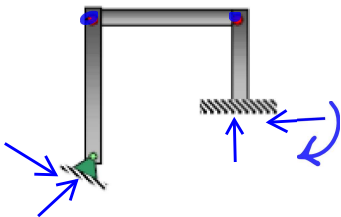
$$r = 9$$



$$r = 3n$$
  

$$7 > 6$$

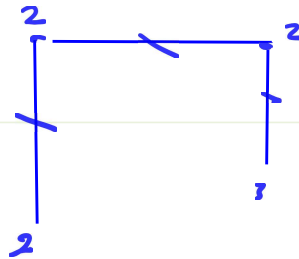
statically indeterminate to the first degree



$$r = 9$$

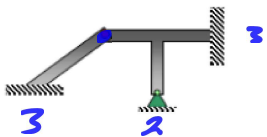
$$5 = 3 + 2$$

statically determinate



$$r = 3n$$
  

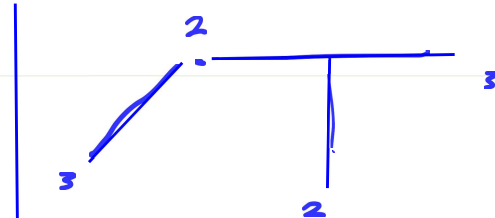
$$9 = 9$$



$$r = 9$$

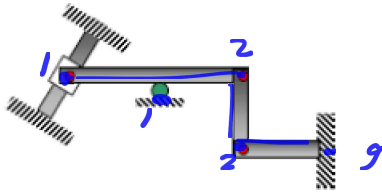
$$8 > 4$$

statically indeterminate to fourth order



$$r = 3n$$
  

$$10 > 6$$



$$r = 9$$

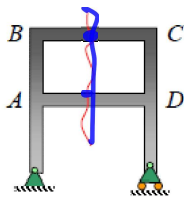
$$3n = 9$$

statically determinate

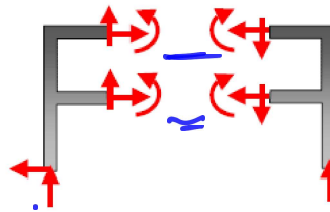
### Example 2-3

Classify each of the frames shown in figure below as statically determinate or statically indeterminate. If statically indeterminate, report the number of degrees of indeterminacy. The frames are subjected to external loadings that are assumed to be known and can act anywhere on the frames.

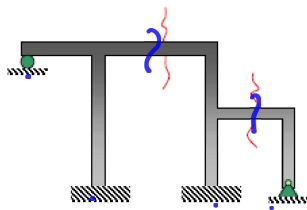
#### SOLUTION



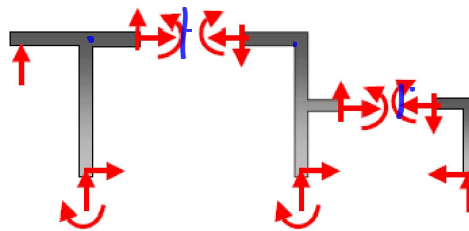
$$r = 9, n = 6, 9 - 6 = 3$$



Statically **indeterminate** to the **third** degree



$$r = 15, n = 3, 15 - 9 = 6$$

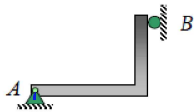


Statically **indeterminate** to the **sixth** degree

### Example 2-4

Classify each of the structures in the figure below as stable or unstable. The structures are subjected to arbitrary external loads that are assumed to be known.

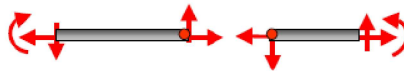
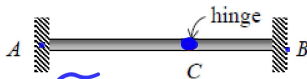
#### SOLUTION



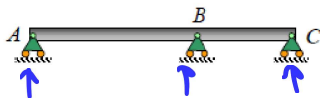
unstable  
can count

The member is stable since the reactions are non-concurrent and nonparallel. It is also statically determinate.

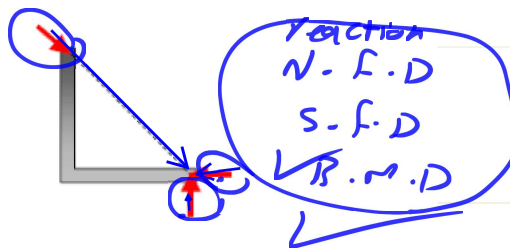
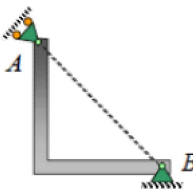
$b > 4$



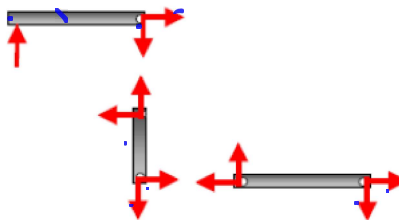
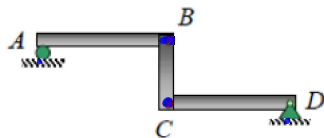
The compound beam is stable. It is also indeterminate to the second degree.



The compound beam is unstable since the three reactions are all parallel.



The member is unstable since the three reactions are concurrent at B.



un  
3 < 5

The structure is unstable since  $r = 7$ ,  $n = 3$ , so that,  $r < 3n$ ,  $7 < 9$ . Also, this can be seen by inspection, since AB can move horizontally without restraint.