

M R
Ahmed Mahdy



فيزياء	استاتيكا
دوائر كهربية	الكثرونيات
ميكانيكا الانشآت	هيدروليكا

مدرس خصوصي

حضورى

اونلاين

بحصل الطالب علي

مقاطع فيديو هات لشرح المقرر بشكل وافى

ملخص للمادة Pdf للمذكرة واطراجة

محاضرات مباشرة علي برنامج زووم

مناقشة الأجزاء الغير مفهومة

تواصل مستمر مع معلم المادة



للتواصل

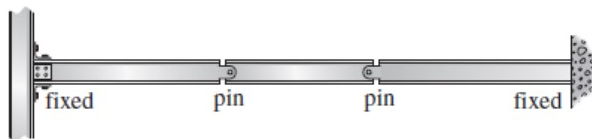
0567630097

0565657741

Assignment No (1)

Stability and instability of Structures

Specify the Structures shown below as statically determinate or statically indeterminate. If statically indeterminate calculate degree of indeterminacy and the number of degrees-of-freedom.



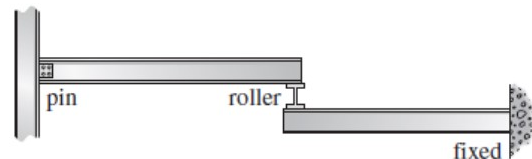
$$r = 6, C = 2$$

$$r > C + 3$$

$$6 > 2 + 3$$

$$6 - 5 = 1$$

indeterminate to 1st degree



$$r = 5, C = 2$$

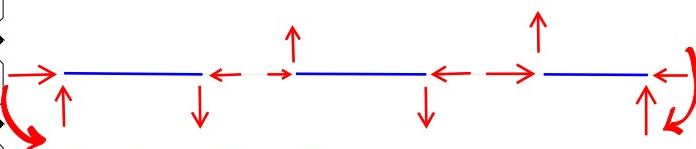
$$r = C + 3$$

$$5 = 2 + 3$$

determinate

حل آخر

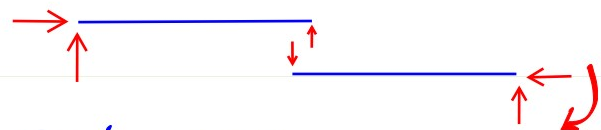
حل آخر



$$r = 10, n = 3$$

$$r - 3n = 10 - 3 * 3 = 1$$

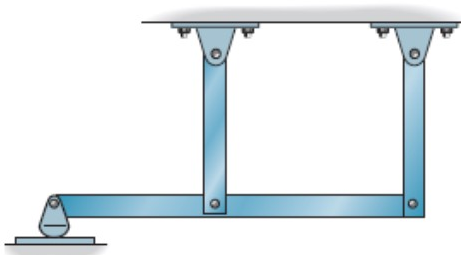
indeterminate to 1st degree



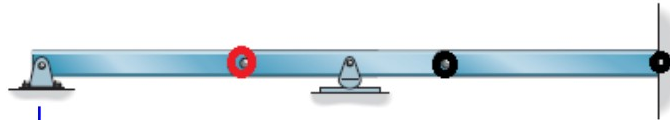
$$r = 6, n = 2$$

$$r - 3n = 6 - 3 * 2 = 0$$

Statically determinate



- (c) Since the rocker on the horizontal member can not resist a horizontal force component, the structure is unstable.



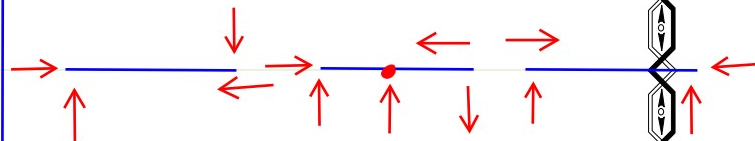
$$r = 5, C = 2$$

$$r = C + 3$$

$$5 = 2 + 3$$

determinate

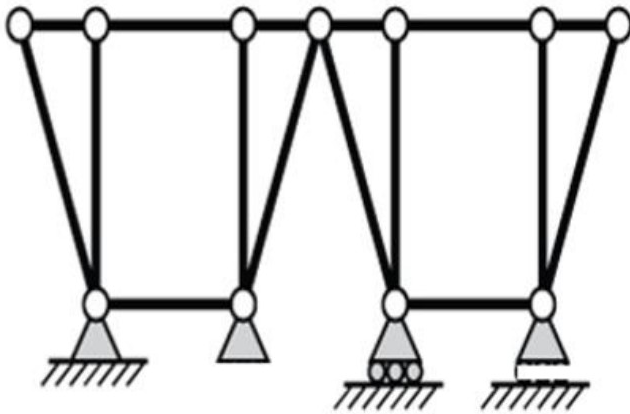
حل ٢١



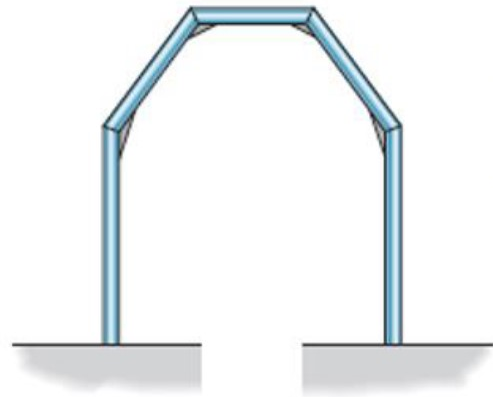
$$r = 9, n = 3$$

$$r - 3n = 9 - 3 \times 3 = 0$$

statically determinate



unstable (internal collapse mechanism)



$$r = 6, C = 0$$

$$r > C + 3$$

$$6 > 0 + 3$$

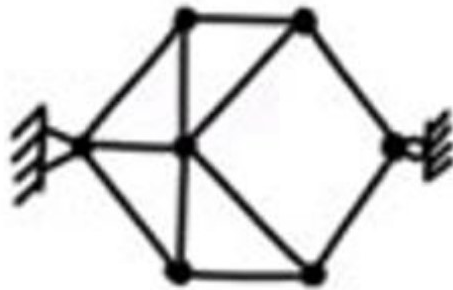
indeterminate to third degree

حل ٢١

$$r = 6, n = 1$$

$$r - 3n = 6 - 3 \times 1 = 3$$

indeterminate to third degree



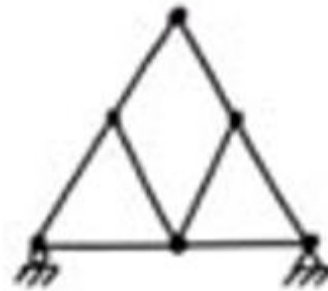
$$m = 11, r = 3, j = 7$$

$$m + r = 2j$$

$$14 = 2 \times 7$$

statically determinate

3-1



$$m = 8, r = 3, j = 6$$

$$m + r < 2j$$

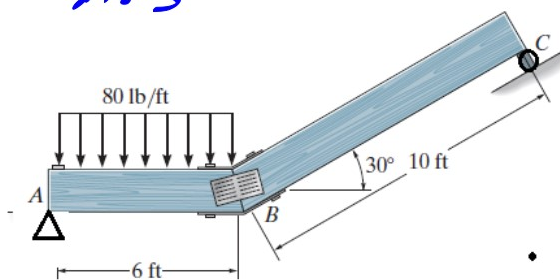
$$8 + 3 < 2 \times 6$$

unstable



unstable

2.25

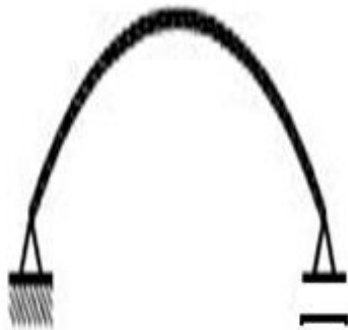


$$r = 3, C = 0$$

$$r = C + 3$$

$$3 = 0 + 3$$

stable, determinate



$$r = 3, C = 0$$

$$r = C + 3$$

$$3 = 0 + 3$$

determinate

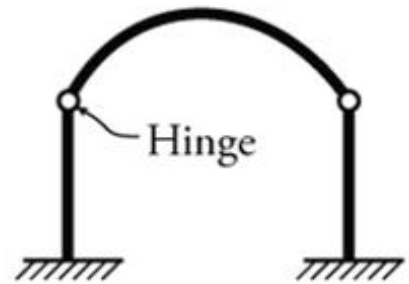


$$r = 6, C = 0$$

$$r > C + 3$$

$$6 > 0 + 3$$

indeterminate to
third degree



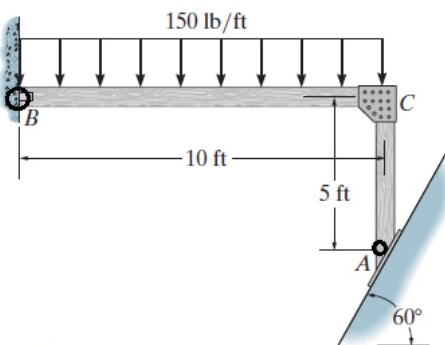
$$r = 6, C = 2$$

$$r > C + 3$$

$$6 > 2 + 3$$

indeterminate to first degree

2.34



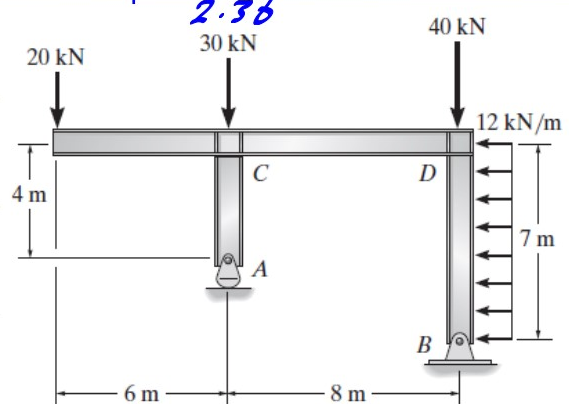
$$r = 4, C = 0$$

$$r > C + 3$$

$$4 > 0 + 3$$

indeterminate to first degree

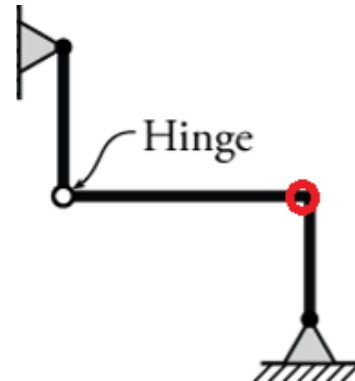
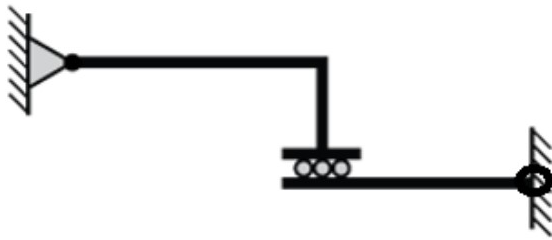
2.36



$$r = 3, C = 0$$

$$3 = 0 + 3$$

determinate



$$r = 4, C = 2$$

$$r < C + 3$$

$$3 < 2 + 3$$

unstable

unstable

$$m = 6$$

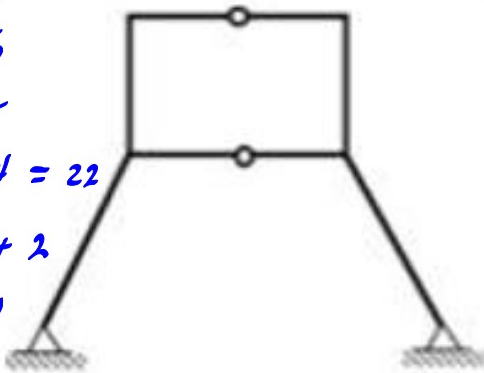
$$T = 6$$

$$3m + r$$

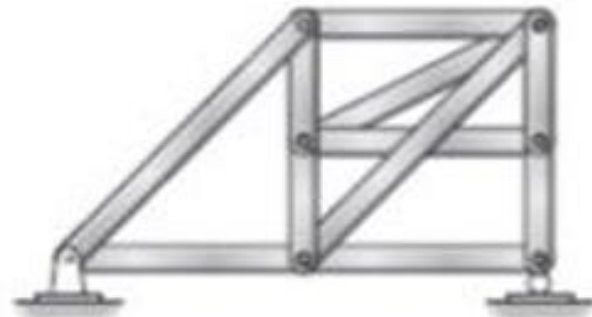
$$3 \times 6 + 4 = 22$$

$$3 \times 6 + 2$$

$$= 20$$



3-2



$$m = 6, r = 4, T = 6, C = 2$$

$$m = 11, r = 3, T = 7$$

$$3m + r > 3T + C$$

$$m + r = 2T$$

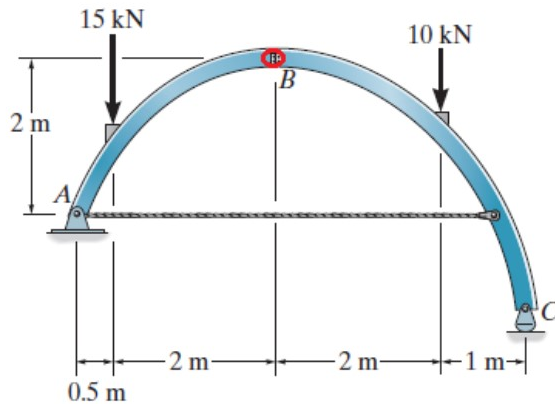
$$3 \times 6 + 4 > 3 \times 6 + 2$$

$$11 + 3 = 2 \times 7$$

$$22 > 20$$

determinate

indeterminate to 2nd degree

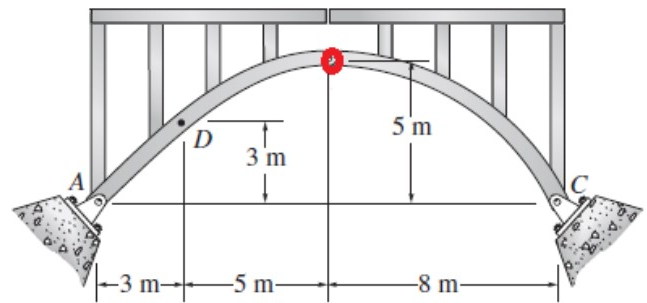


$$r = 3, C = 1$$

$$r < C + 3$$

$$3 < 1 + 3$$

un stable

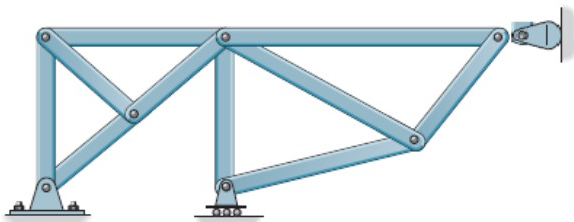


$$r = 4, C = 1$$

$$r = C + 3$$

$$4 = 1 + 3$$

stable, determinate

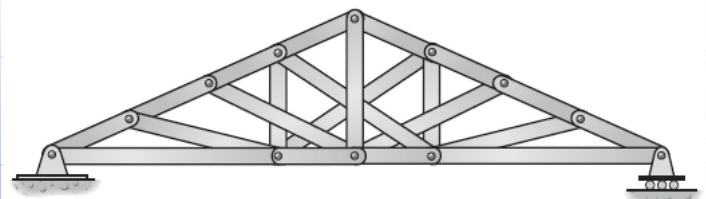


$$m = 10, r = 4, J = 7$$

$$m + r = 2J$$

$$10 + 4 = 2 \times 7$$

determinate



$$m = 21, r = 3, J = 12$$

$$m + r = 2J$$

$$21 + 3 = 2 \times 12$$

determinate