

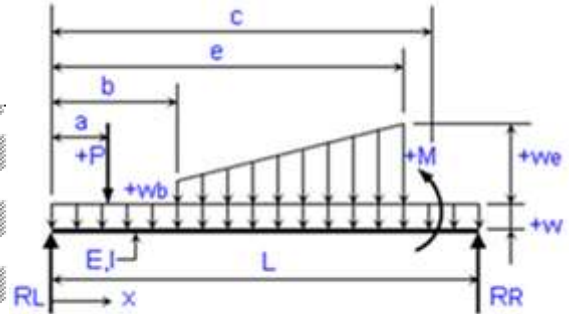
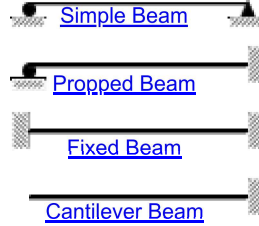
SINGLE-SPAN BEAM ANALYSIS

For Simple, Propped, Fixed, or Cantilever Beams

Input Data:

Beam Data:

Span Type?	Propped	ft.
Span, L =	20.0000	ft.
Modulus, E =	29000	ksi
Inertia, I =	391.00	in. ⁴



Nomenclature

Beam Loadings:

Full Uniform:

w = 0.0500 kips/ft.

	Start		End	
Distributed:	b (ft.)	wb (kips/ft.)	e (ft.)	we (kips/ft.)
#1:	2.0000	3.0000	12.0000	5.0000
#2:				
#3:				
#4:				
#5:				
#6:				
#7:				
#8:				

Results:

Reactions:

RL =	32.92 k	RR =	48.08 ft-k
ML =	N.A.	MR =	-254.86 ft-k

Maximum Moments:

+M(max) =	173.67 ft-k	@ x =	10.00 ft
-M(max) =	-254.86 ft-k	@ x =	20.00 ft

Maximum Deflections:

-Δ(max) in =	-0.746	@ x =	8.84 ft
+Δ(max) in =	0.000	@ x =	0.00 ft
Δ(ratio) =	L/322		

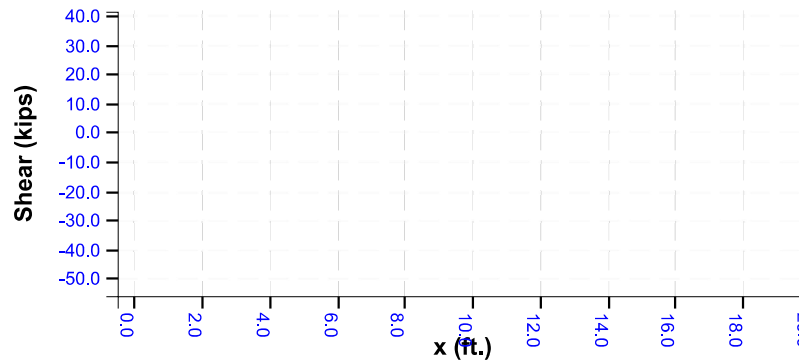
Point Loads:

	a (ft.)	P (kips)
#1:	10.0000	20.00
#2:	12.0000	20.00
#3:		
#4:		
#5:		
#6:		
#7:		
#8:		
#9:		
#10:		
#11:		
#12:		
#13:		
#14:		
#15:		

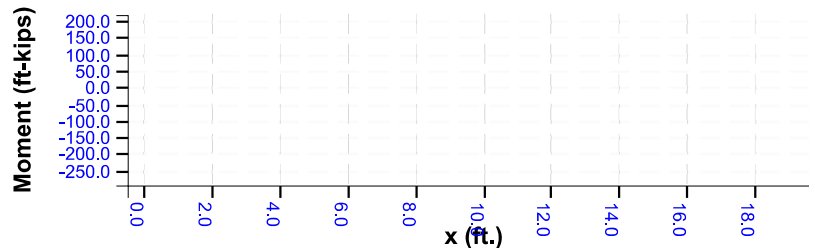
Moments:

	c (ft.)	M (ft-kips)
#1:	2.0000	20.00
#2:	4.0000	20.00
#3:		
#4:		

Shear Diagram



Moment Diagram



Tabulation of Single-Span Beam Shear, Moment, Slope, and Deflection for 50 Equal Segments

Point #	x (ft.)	Shear (k)	Moment (ft-k)	Slope or Rotation (deg.)	Deflection (in.)
1	0.0000	32.92	0.00	-0.6316	0.0000
2	0.4000	32.90	13.17	-0.6297	-0.0529
3	0.8000	32.88	26.32	-0.6240	-0.1054
4	1.2000	32.86	39.47	-0.6144	-0.1573
5	1.6000	32.84	52.61	-0.6010	-0.2082
6	2.0000	32.82	45.75	-0.5838	-0.2579
7	2.4000	31.59	58.63	-0.5686	-0.3062

8	2.8000	30.32	71.01	-0.5497	-0.3531
9	3.2000	29.02	82.88	-0.5273	-0.3982
10	3.6000	27.69	94.22	-0.5015	-0.4413
11	4.0000	26.32	85.03	-0.4725	-0.4821
12	4.4000	24.93	95.28	-0.4462	-0.5206
13	4.8000	23.50	104.97	-0.4171	-0.5568
14	5.2000	22.04	114.08	-0.3852	-0.5904
15	5.6000	20.55	122.59	-0.3507	-0.6213
16	6.0000	19.02	130.51	-0.3139	-0.6491
17	6.4000	17.47	137.81	-0.2748	-0.6738
18	6.8000	15.88	144.48	-0.2337	-0.6951
19	7.2000	14.26	150.51	-0.1908	-0.7129
20	7.6000	12.61	155.88	-0.1462	-0.7271
21	8.0000	10.92	160.59	-0.1001	-0.7374
22	8.4000	9.21	164.62	-0.0528	-0.7438
23	8.8000	7.46	167.95	-0.0044	-0.7462
24	9.2000	5.68	170.58	0.0449	-0.7445
25	9.6000	3.87	172.49	0.0949	-0.7387
26	10.0000	2.02	173.67	0.1453	-0.7286
27	10.4000	-19.85	166.11	0.1947	-0.7143
28	10.8000	-21.76	157.78	0.2419	-0.6960
29	11.2000	-23.70	148.69	0.2865	-0.6739
30	11.6000	-25.67	138.82	0.3284	-0.6481
31	12.0000	-27.68	128.15	0.3672	-0.6189
32	12.4000	-47.70	109.08	0.4018	-0.5867
33	12.8000	-47.72	89.99	0.4307	-0.5518
34	13.2000	-47.74	70.90	0.4541	-0.5147
35	13.6000	-47.76	51.81	0.4720	-0.4759
36	14.0000	-47.78	32.70	0.4843	-0.4358
37	14.4000	-47.80	13.58	0.4910	-0.3949
38	14.8000	-47.82	-5.54	0.4922	-0.3536
39	15.2000	-47.84	-24.67	0.4878	-0.3126
40	15.6000	-47.86	-43.81	0.4778	-0.2721
41	16.0000	-47.88	-62.95	0.4623	-0.2326
42	16.4000	-47.90	-82.11	0.4412	-0.1948
43	16.8000	-47.92	-101.27	0.4145	-0.1589
44	17.2000	-47.94	-120.44	0.3822	-0.1255
45	17.6000	-47.96	-139.62	0.3444	-0.0950
46	18.0000	-47.98	-158.81	0.3010	-0.0679
47	18.4000	-48.00	-178.00	0.2520	-0.0447
48	18.8000	-48.02	-197.20	0.1974	-0.0259
49	19.2000	-48.04	-216.41	0.1372	-0.0118
50	19.6000	-48.06	-235.63	0.0714	-0.0030
51	20.0000	-48.08	-254.86	0.0000	0.0000