



FIGURE P5-10

Problem 5-22

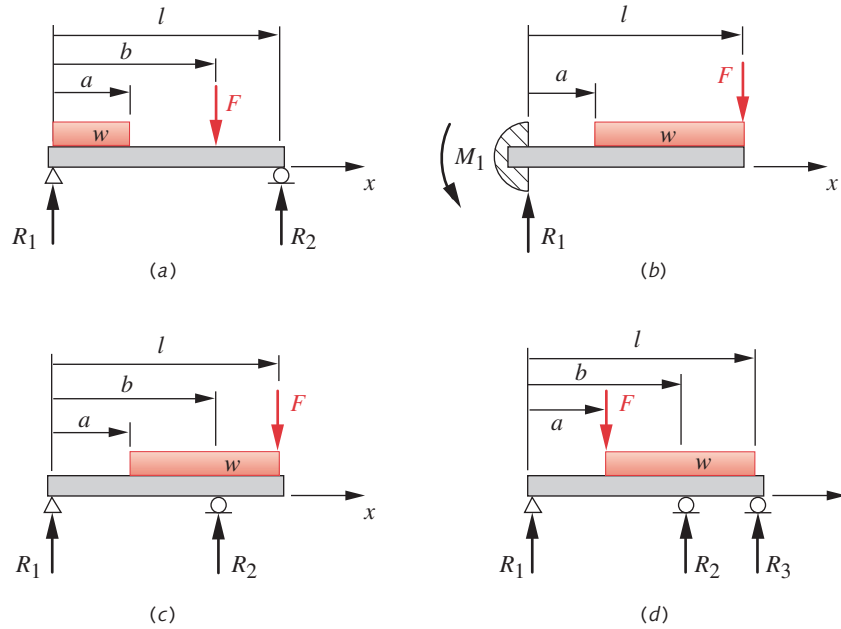


FIGURE P5-11

Beams and Beam Loadings for Problems 5-23 to 5-26 — see Table P5-2 for Data

- (a) Coulomb-Mohr theory
- (b) Modified-Mohr theory

5-31 Design a jack-stand in a tripod configuration that will support 2 tons of load with a safety factor of 3. Use SAE 1020 steel and minimize its weight.

Table P5-2 Data for Problems 5-23 through 5-26

Use only data relevant to the particular problem. Lengths in m, forces in N, I in m^4 .

Row	l	a	b	w^*	F	I	c	E
<i>a</i>	1.00	0.40	0.60	200	500	$2.85E-08$	$2.00E-02$	steel
<i>b</i>	0.70	0.20	0.40	80	850	$1.70E-08$	$1.00E-02$	steel
<i>c</i>	0.30	0.10	0.20	500	450	$4.70E-09$	$1.25E-02$	steel
<i>d</i>	0.80	0.50	0.60	65	250	$4.90E-09$	$1.10E-02$	steel
<i>e</i>	0.85	0.35	0.50	96	750	$1.80E-08$	$9.00E-03$	steel
<i>f</i>	0.50	0.18	0.40	450	950	$1.17E-08$	$1.00E-02$	steel
<i>g</i>	0.60	0.28	0.50	250	250	$3.20E-09$	$7.50E-03$	steel
<i>h</i>	0.20	0.10	0.13	400	500	$4.00E-09$	$5.00E-03$	alum
<i>i</i>	0.40	0.15	0.30	50	200	$2.75E-09$	$5.00E-03$	alum
<i>j</i>	0.20	0.10	0.15	150	80	$6.50E-10$	$5.50E-03$	alum
<i>k</i>	0.40	0.16	0.30	70	880	$4.30E-08$	$1.45E-02$	alum
<i>l</i>	0.90	0.25	0.80	90	600	$4.20E-08$	$7.50E-03$	alum
<i>m</i>	0.70	0.10	0.60	80	500	$2.10E-08$	$6.50E-03$	alum
<i>n</i>	0.85	0.15	0.70	60	120	$7.90E-09$	$1.00E-02$	alum

* Note that w is a unit force of N/m

Problem numbers in *italics* are design problems.