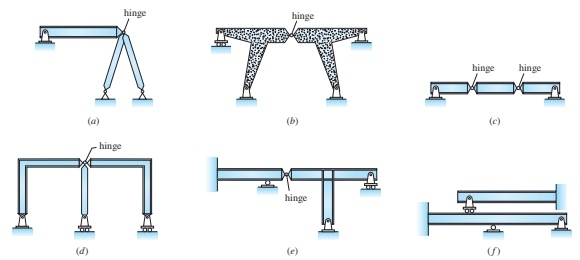


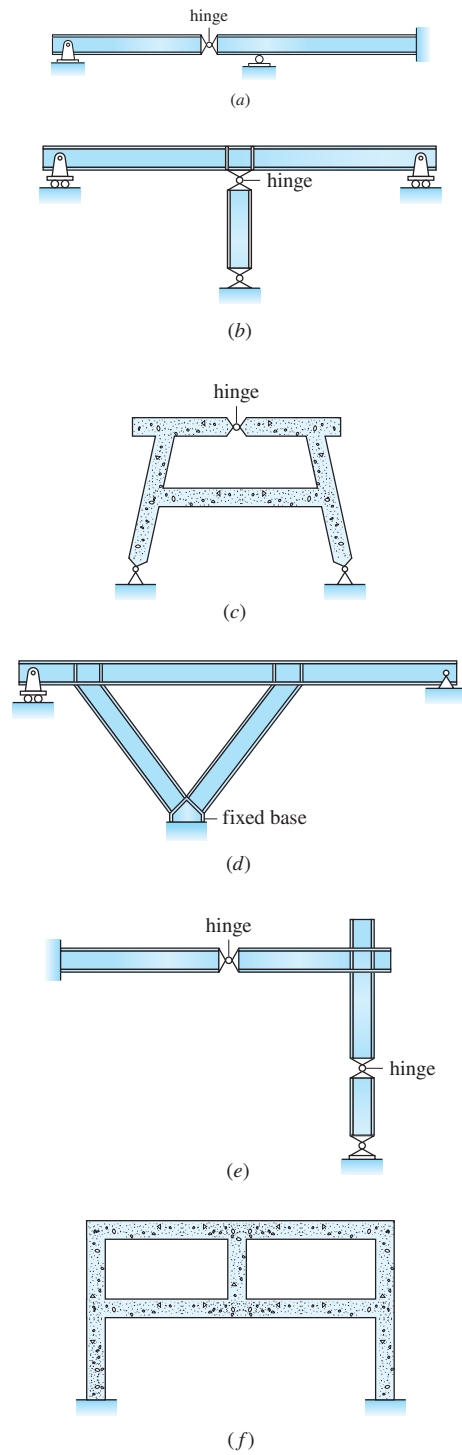
P3.33. Classify the structures in Figure P3.33. Indicate if stable or unstable. If unstable, indicate the reason. If the structure is stable, indicate if determinate or indeterminate. If indeterminate, specify the degree.



P3.33

- (a) Indeterminate 1°
- (b) Indeterminate 3°
- (c) Unstable ($R < 3 + C$)
- (d) Unstable
- (e) Indeterminate 3°
- (f) Indeterminate 4°

P5.53. Classify the structures in Figure P5.53. Indicate whether stable or unstable. If stable, indicate whether determinate or indeterminate. If indeterminate, give the degree.



P5.53

P5.53. Continued

6 Reactions

-3 Equations of Equilibrium

-1 Equation of Condition ($M_{\text{HINGE}} = 0$)

∴ Indeterminate 2°

Reactions Form A Parallel Force System : Unstable

Remove Restraints to Establish Degree of Determinacy

Cut@ A: 3 Restraints

∴ Indeterminate 3°

Remove Restraints: 1@A; 1@B; 1@C; 3@ Cut@D

∴ Indeterminate 6°

5 Reactions

-3 Equations of Equil.

-2 Eqns. of Condition

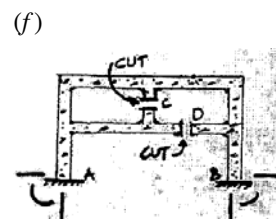
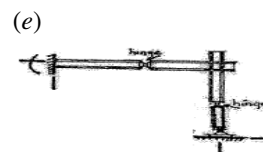
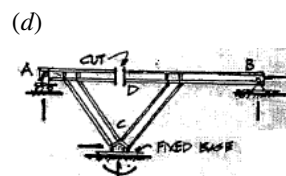
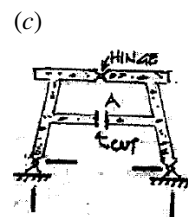
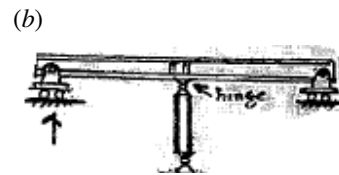
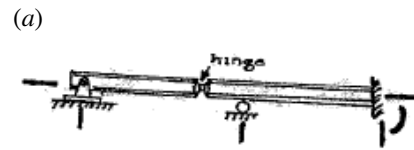
($M_{\text{HINGES}} = 0$)

∴ Determinate

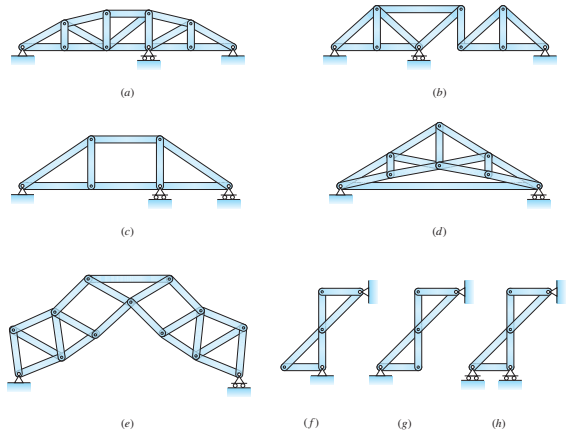
Remove Restraints:

3@B; 3 Cut @ C; 3 Cut @ D

∴ Indeterminate 9°



P4.2. Classify the trusses in Figure P4.2 as stable or unstable. If stable, indicate if determinate or indeterminate. If indeterminate, indicate the degree.



P4.2

(a) $b = 17$
 $r = 5$
 $n = 10$
 $(b + r = 22) > (2n = 20)$
2 deg. Indeterminate, stable

(e) $b = 21$
 $r = 3$
 $n = 13$
 $(b + r = 24) > (2n = 26)$
Unstable

(b) $b = 13$
 $r = 5$
 $n = 9$
 $(b + r = 18) > (2n = 18)$
Determinate, stable

(f) $b = 6$
 $r = 4$
 $n = 5$
 $(b + r = 10) > (2n = 10)$
Determinate, stable

(c) $b = 8$
 $r = 4$
 $n = 6$
 $(b + r = 12) > (2n = 12)$
Determinate, stable

(g) $b = 6$
 $r = 4$
 $n = 5$
 $(b + r = 10) > (2n = 10)$
Unstable: load applied at joint connecting diagonals cannot be supported.

(d) $b = 14$
 $r = 3$
 $n = 8$
 $(b + r = 17) > (2n = 16)$
1 deg. Indeterminate, stable

(h) $b = 6$
 $r = 4$
 $n = 5$
 $(b + r = 10) > (2n = 10)$
Determinate, stable