

Remarks: See §4.5, page 130 till 144

Hints:

Free all rigid parts in the hinges and the supports.

Answers:

1. c. 2-times statically indeterminate

$$r = 3 + 1 + 2 = 6 \text{ support reactions}$$

$$v = 2 \text{ interaction forces}$$

$$e = 3 + 3 = 6 \text{ equilibrium equations}$$

$$n = r + v - e = 2$$

2. b. 1- times statically indeterminate

$$r = 3 + 1 + 1 + 1 = 6$$

$$v = 2 + 2 = 4$$

$$e = 3 + 3 + 3 = 9$$

$$n = r + v - e = 1$$

3. c. 2- times statically indeterminate

Divide the construction in two rigid parts

$$r = 2 + 2 + 2 = 6$$

$$v = 2$$

$$e = 3 + 3 = 6$$

$$n = r + v - e = 2$$

Alternative Solution:

Recognize a bar support in the support in the middle

$$r = 2 + 1 + 2 = 5$$

$$e = 3$$

$$n = r - e = 2$$