Show all work for full credit.

Name: Solution

1. For the simple supported W12 x 30 beam, determine the maximum flexural stress due to the loads shown.

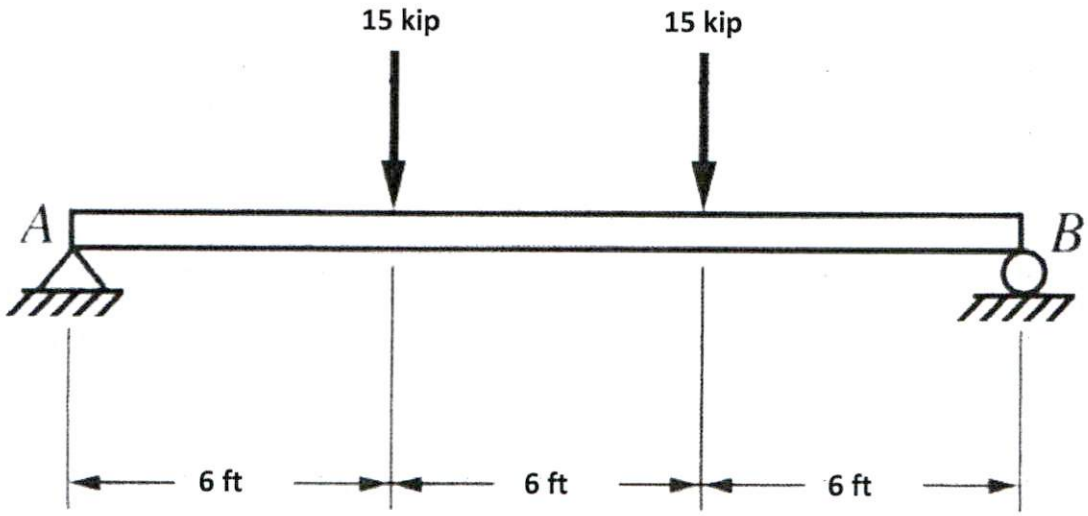

Table 13-1, case 3

$$M_{max} = Pa = 15\ kip\ (6\ ft) = 90\ kip.ft$$

Table A-1(a), W12x30

$$S = 38.6\ in^3$$

$$\sigma_{Allow} = \frac{M_{MAX}}{S} = \frac{90\ kip.ft\ \left(\frac{12in}{ft}\right)}{38.6\ in^3}$$

$$= 28\ ksi$$