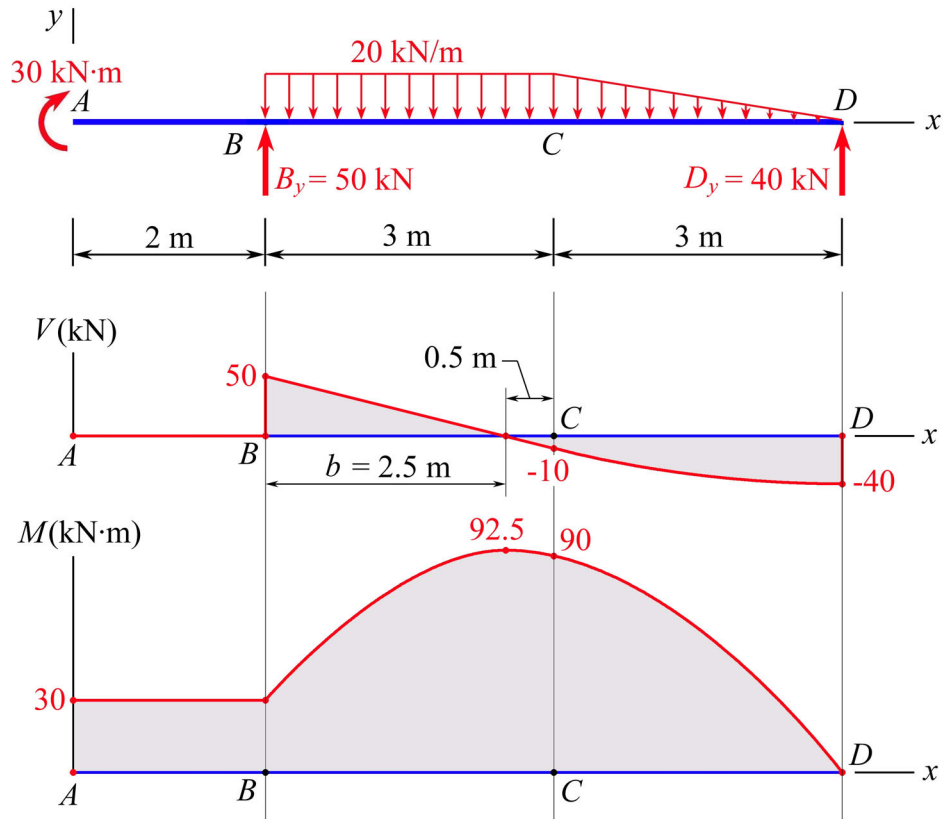


Answers to MEEG 3013 Test II

1. (a) Free-body diagram, shear diagram (V - x), and bending-moment diagram (M - x):



$$(b) \quad V = 30 \langle x \rangle^{-1} + 50 \langle x - 2 \rangle^0 - 20 \langle x - 2 \rangle^1 + \frac{10}{3} \langle x - 5 \rangle^2$$

$$M = 30 \langle x \rangle^0 + 50 \langle x - 2 \rangle^1 - 10 \langle x - 2 \rangle^2 + \frac{10}{9} \langle x - 5 \rangle^3$$

$$(c) \quad M_{\max} = M_{\text{at } x=4.5\text{m}} = 92.5 \text{ kN}\cdot\text{m}$$

2. $50.5^\circ \geq \theta \geq -103.6^\circ$

3. A. (f)

B. (d)

C. (a)

4. (See text.)