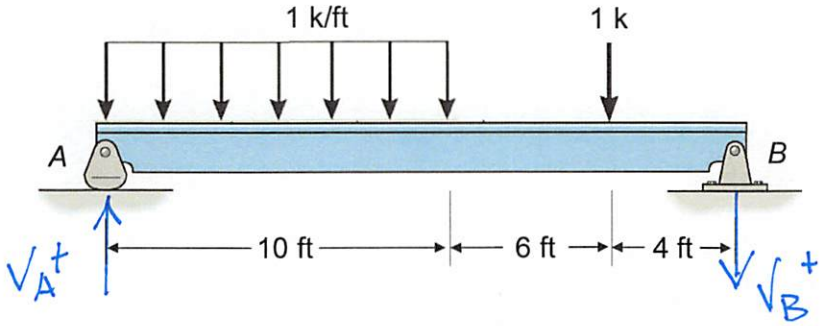
CIVL 3121 Quiz #5 S26 Name: _____

Construct a complete shear force and bending moment diagram for the following beam.

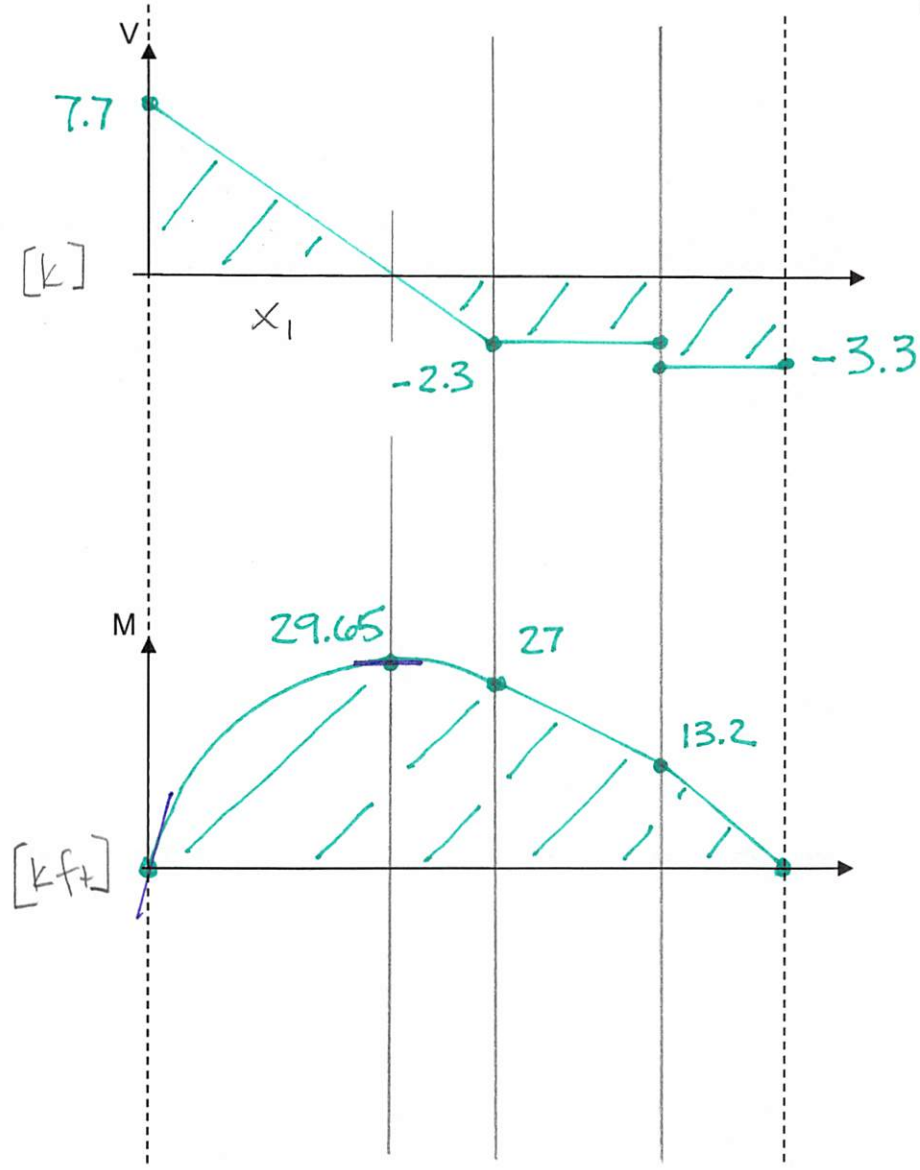


$$\overset{+}{\circlearrowleft}\sum M_B = 0 = 1^k(4\,ft) + 10^k(15\,ft) - V_A(20\,ft)$$

$$V_A = 7.7^k$$

$$+\uparrow \sum F_y = 0 = V_A - V_B - 1^k - 10^k$$

$$V_B = -3.3^k$$



$$x_1 = \frac{7.7^k}{1^{k/ft}} = 7.7\,ft$$

$$\Delta V = \int w\,dx \qquad \frac{dV}{dx} = w$$

$$\Delta M = \int V\,dx \qquad \frac{dM}{dx} = V$$

a) What is the maximum bending moment, and where does it occur? 29.65 kft @ x = 7.7 ft

b) What is the maximum shear force, and where does it occur? 7.7k @ A

c) What is the slope of the bending moment diagram at x = 10 ft? -2.3k