

2/96 Equivalent force - couple system at point O:

$$\underline{R} = \Sigma \underline{F} = (-25 + 20 \sin 30^\circ) \underline{i} + (-30 - 20 \cos 30^\circ) \underline{j} = \underline{-15 \underline{i} - 47.3 \underline{j} \text{ kN}}$$

$$\curvearrowright M_o = 25(5) - 30(9) - (20 \cos 30^\circ) 9 - (20 \sin 30^\circ) 5 = -351 \text{ kN}\cdot\text{m}$$

For final location of \underline{R} :

$$\underline{r} \times \underline{R} = \underline{M}_o, (x \underline{i} + y \underline{j}) \times (-15 \underline{i} - 47.3 \underline{j}) = -351 \underline{k}$$

$$-47.3x + 15y = -351$$

$$\text{Axis intersections: } \underline{x = 7.42 \text{ m}, y = -23.4 \text{ m}}$$

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