



$$F_y = F \sin \theta$$

$$F_x = F \cos \theta$$

$$F \sin 13^\circ = 0.225 F$$

$$F \cos 13^\circ = 0.974 F$$

$$\sum F_y = 0 \quad -500 - 500 + R_{y1} + R_{y2} + F \sin 13^\circ = 0$$

$$R_{y1} + R_{y2} + 0.225 F = 1000$$

$$\sum F_x = 0 \quad -F \cos 13^\circ + R_{x2} + R_{x1} = 0$$

$$-0.974 F + R_{x2} + R_{x1} = 0$$

$$\sum M_A = 0 \quad R_{y1} \cdot X_4 + F_y \cdot (X_4 + X_2) + F_x \cdot Y_2 - 500(X_4 + X_1) - 500(X_4 + X_3) = 0$$

$$4.5 R_{y1} + 11.3 F \sin 13^\circ + 1.8 F \cos 13^\circ - 500 \cdot 18 - 500 \cdot (-4.5) = 0$$

$$4.5 R_{y1} + 2.5425 F + 1.7532 F = 6750$$

$$4.5 R_{y1} + 4.2957 F = 6750$$

$$\sum M_B = 0 \quad -500 \cdot X_4 + R_{x2} \cdot Y_1 - R_{y2} \cdot X_4 + R_{x1} \cdot Y_1 + F_y \cdot (X_3 - X_2) - F_x \cdot (Y_1 - Y_2) + R_{y1} \cdot X_3 = 0$$

$$-500 \cdot (4.5) + 3.6 R_{x2} - 4.5 R_{y2} + 3.6 R_{x1} + 0.225 F (-2.2) - 0.974 (1.8) + 9 R_{y1} = 0$$

$$3.6 R_{x2} - 4.5 R_{y2} + 0.495 F + 1.7532 F + 9 R_{y1} = 2250$$

$$\sum M_D = 0 \quad 3.6 R_{x2} - 4.5 R_{y2} - 9 R_{y1} + 2.2482 F = 2250$$

$$\sum M_E = 0 \quad -R_{y2} \cdot X_4 - 500 \cdot X_1 + F_{x1} \cdot Y_2 + F_y \cdot X_2 - 500 \cdot X_3 = 0$$

$$-4.5 R_{y2} - 500 \cdot 13.5 + 1.8 F_x + 6.8 F_y - 500 \cdot (-9) = 0$$

$$-4.5 R_{y2} + 1.8 F \cos 13^\circ + 6.8 F \sin 13^\circ = 2250$$

$$-4.5 R_{y2} + 1.8 \cdot 225 F + 6.8 \cdot 974 F = 2250$$

$$-4.5 R_{y2} + 7.0282 F = 2250$$