

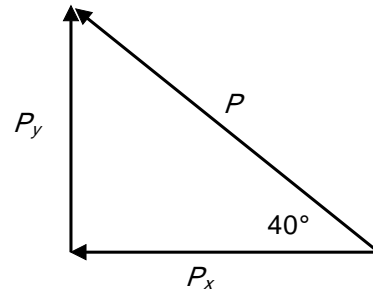
<2.7~2.8 >

2.25 $P_x = 135 \text{ N}$

(a) $P_x = P \cos 40^\circ$

$$P = \frac{P_x}{\cos 40^\circ} = \frac{135 \text{ N}}{\cos 40^\circ} = 176.2 \text{ N}$$

(b) $P_y = P_x \tan 40^\circ = (135 \text{ N}) \tan 40^\circ$
 $= 113.3 \text{ N}$



2.39 (a) $R_x = F_x = (620 \text{ N}) \cos \alpha + (270 \text{ N}) \cos(35^\circ + \alpha) - (710 \text{ N}) \cos \alpha = 0$

$$[\cos(A+B) = \cos A \cos B - \sin A \sin B]$$

$$(620 \text{ N} - 710 \text{ N}) \cos \alpha + (270 \text{ N}) (\cos 35^\circ \cos \alpha - \sin 35^\circ \sin \alpha) = 0$$
$$- \cos \alpha + 3 \cos 35^\circ \cos \alpha - 3 \sin 35^\circ \sin \alpha = 0$$

$$\tan \alpha = \frac{3 \cos 35^\circ - 1}{3 \sin 35^\circ} = 0.8470$$

$$\alpha = \tan^{-1} 0.8470 = 40.265^\circ$$

$$\alpha = 40.3^\circ$$

(b) $R = R_y = F_y = (620 \text{ N}) \sin \alpha + (270 \text{ N}) \sin(35^\circ + \alpha) + (710 \text{ N}) \sin \alpha$
 $= (620 \text{ N}) \sin 40.265^\circ + (270 \text{ N}) \sin(35^\circ + 40.265^\circ) + (710 \text{ N}) \sin 40.265^\circ$
 $= 1121 \text{ N}$