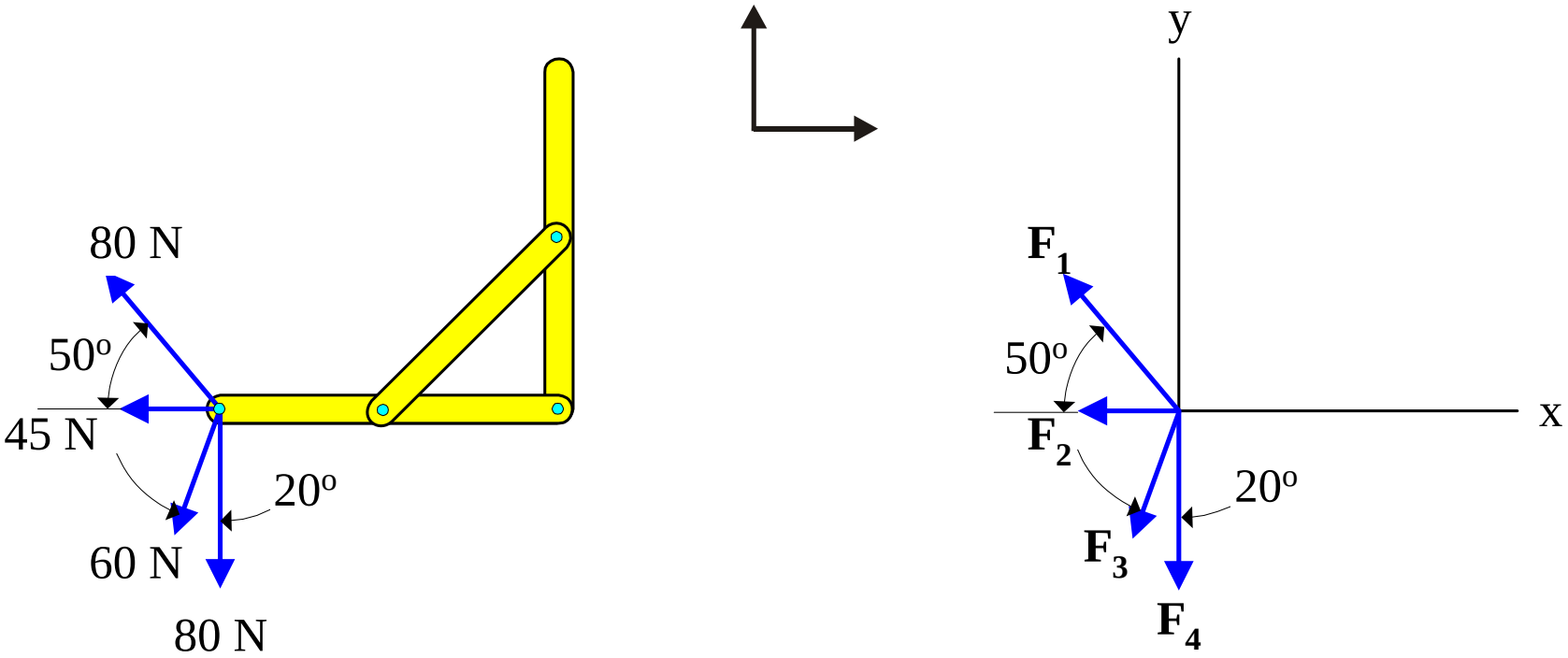
Example 2.6

Resultant Force by Summing Rectangular Components

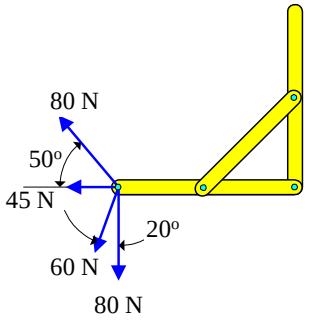
(Tabular Form)

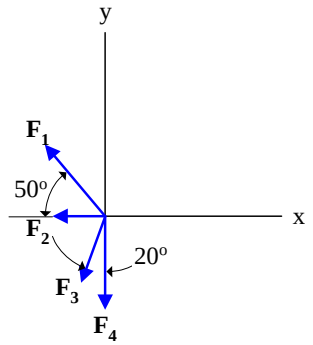
Example 2.6:

Four forces act on a bracket as shown in the figure. Resolve the four forces into their rectangular components and determine the magnitude of the resultant of the four forces.



Positive Sign Convention



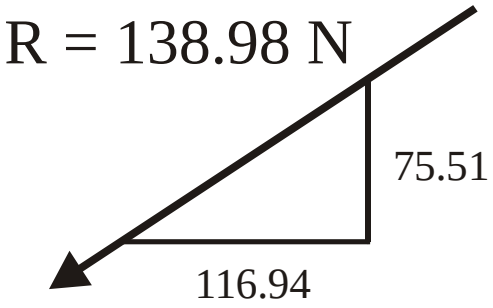


Force	**Magnitude** (N)	**x – component** (N)	**y – component** (N)
F_1	80	-51.42	+61.28
F_2	45	-45	0
F_3	60	-20.52	-56.38
F_4	80	0	-80
Components of resultant, **R** →		Σ = -116.94 N	Σ = -75.51 N

RESULTS

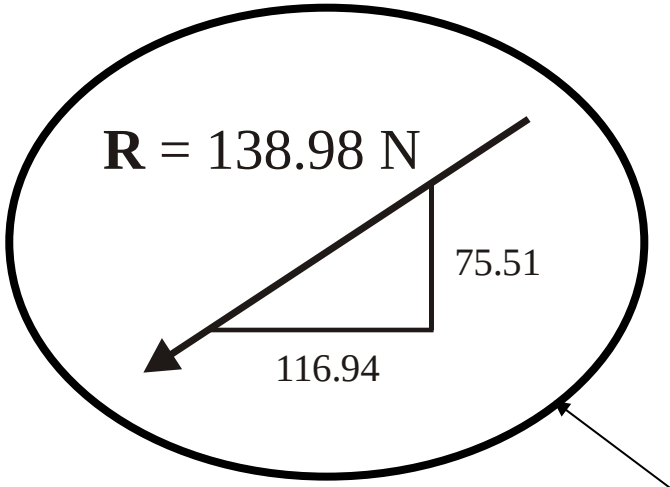
$$R^2 = \sqrt{(-116.94)^2 + (-75.1)^2}$$

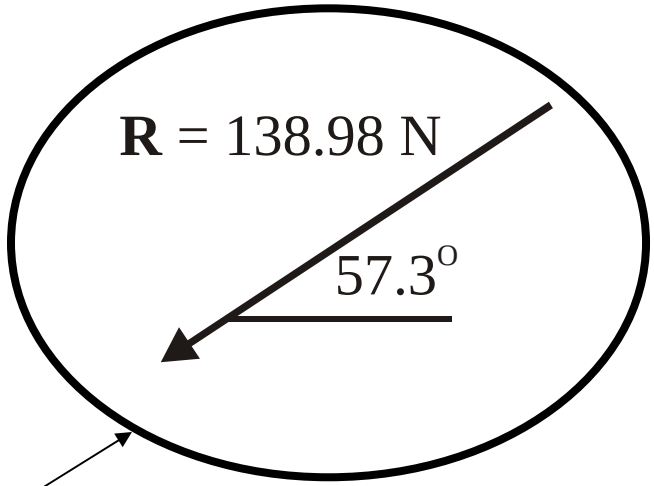
$$R = 138.98\text{N}$$



$$\tan\theta = \frac{75.1}{116.94}$$

$$\theta = 57.3^{O}$$





Show Resultant, **R** either way