Answer on Question #51660, Physics, Mechanics | Kinematics | Dynamics

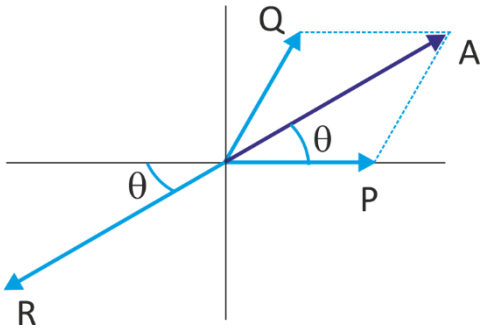
A 6kg bomb at rest exploded into three equal pieces P,Q,R .if P and Q fly with equal speed 20 m/s making an angle 60 degree with each other. The angle between the direction of P and R is..

1) pi/4. 2) pi/2. 3) 3pi/4. 4) 5pi/6

Solution:

Let θ be the angle made by the resultant (vector A) of P and Q with P.

$$\theta = \frac{60^\circ}{2} = 30^\circ = \frac{\pi}{6}$$



Since initially bomb is in rest so initially momentum of the bomb = 0.

Then, momentum of the R must be in the direction opposite to the A so that final momentum would be zero.

Angle made by R with P is

$$\pi - \frac{\pi}{6} = \frac{5\pi}{6}$$

Answer: 4) 5pi/6