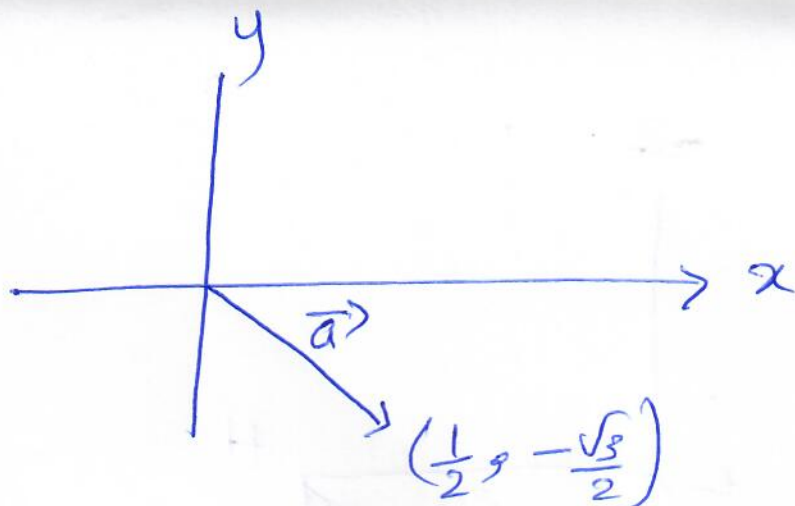


Q2



all possible orthogonal vectors are

$$(\frac{1}{2}, \frac{\sqrt{3}}{2}) \text{ and } (-\frac{1}{2}, -\frac{\sqrt{3}}{2})$$

we need a negative x axis, so the answer

is $b = (-\frac{1}{2}, -\frac{\sqrt{3}}{2})$