Question: Choose the correct answer.

The points (1/√3, 1), (2/√3, 2), (1/√3,3) are the vertices of

a) Isosceles triangle   b) Equilateral

c) Right Triangle   d) None of above

Solution:

Let the three points are named as:

$$A:\left(\frac{1}{\sqrt{3}},\ 1\right)\ ,\qquad B:\left(\frac{2}{\sqrt{3}},\ 2\right)\ ,\qquad C:\left(\frac{1}{\sqrt{3}},\ 3\right)$$

If they represent the three vertices of a triangle ABC, then the length of the three sides are calculated as:

$$|AB|=\sqrt{(2-1)^2+\left(\frac{2}{\sqrt{3}}-\frac{1}{\sqrt{3}}\right)^2}=\sqrt{1^2+\left(\frac{1}{\sqrt{3}}\right)^2}=\sqrt{1+\frac{1}{3}}=\sqrt{\frac{4}{3}}=\frac{2}{\sqrt{3}}$$

$$|BC|=\sqrt{(3-2)^2+\left(\frac{1}{\sqrt{3}}-\frac{2}{\sqrt{3}}\right)^2}=\sqrt{1^2+\left(\frac{-1}{\sqrt{3}}\right)^2}=\sqrt{1+\frac{1}{3}}=\sqrt{\frac{4}{3}}=\frac{2}{\sqrt{3}}$$

$$|AC|=\sqrt{(3-1)^2+\left(\frac{1}{\sqrt{3}}-\frac{1}{\sqrt{3}}\right)^2}=\sqrt{2^2+(0)^2}=\sqrt{4}=2$$

As we can see that, the two sides are equal. That is

$$|AB|=|BC|=\frac{2}{\sqrt{3}}$$

Therefore, the given points are vertices of an Isosceles triangle

The triangle ABC has been plotted, it is obvious that the two sides,

$$|AB|=|BC|$$