if x and b are complementary angles such that $\cos(x) = \frac{\sqrt{3}}{2}$. Find the value of 2 sin b sin x

Solution

If $\cos(x) = \frac{\sqrt{3}}{2}$, then x =30° or pi/6.

Two angles are complementary when they add up to 90°, i.e. x+b=90°.
Knowing that b and x are complementary, we can find that b =90°-x =90°-x=60° or pi/3.

Recall sin b=sin 60°=$\frac{\sqrt{3}}{2}$, sin x= sin 30° = $\frac{1}{2}$.
Then 2 sin b sin x = 2 *$\frac{\sqrt{3}}{2}$ $\frac{1}{2}$ = $\frac{\sqrt{3}}{2}$.