December 2015 Question 1aiii)

$$\lim_{x \to 0} \frac{\sqrt{sin(x)}}{sin(\sqrt{x})}$$

=

$$\lim_{x \to 0} \frac{\frac{\sqrt{sin(x)}}{\sqrt{x}}}{\frac{sin(\sqrt{x})}{\sqrt{x}}}$$

Using

$$\lim_{x \to a} \sqrt{f(x)} = \sqrt{\lim_{x \to a} f(x)}$$

and

$$\lim_{x \to 0} \frac{sin(Ax)}{Ax} = 1$$

=

$$\lim_{x \to 0} \frac{\sqrt{\frac{sin(x)}{x}}}{\frac{sin(\sqrt{x})}{\sqrt{x}}} = 1$$