

$$g(x) = \int_0^x \sqrt{g(t)} dt$$

$$g(0) = 0$$

diffen. by Leibnitz rule

$$g'(x) = \sqrt{g(x)}$$

$$\frac{dg}{\sqrt{g}} = dx$$

$$\Rightarrow 2\sqrt{g} = x + C$$

$$g(0) = 0 \text{ given}$$

$$\Rightarrow C = 0$$

$$\text{Then } \boxed{g(x) = \frac{x^2}{4}}$$

$$\Rightarrow \boxed{g(4) = 4}$$