

## Section 8

$$\int \frac{dx}{\sqrt{x+1} + \sqrt{x}} = \int \frac{(\sqrt{x+1} - \sqrt{x}) dx}{(\sqrt{x+1} + \sqrt{x})(\sqrt{x+1} - \sqrt{x})} = \int (\sqrt{x+1} - \sqrt{x}) dx$$

$$= \boxed{\frac{2}{3}(x+1)^{\frac{3}{2}} - \frac{2}{3}x^{\frac{3}{2}} + C}$$

Check  $\frac{d}{dx}$  (the proposed answer)

$$= \sqrt{x+1} - \sqrt{x} = \frac{(\sqrt{x+1} - \sqrt{x})(\sqrt{x+1} + \sqrt{x})}{\sqrt{x+1} + \sqrt{x}} = \frac{1}{\sqrt{x+1} + \sqrt{x}} \checkmark$$