

1. Evaluate using the Fundamental Theorem of Calculus (part 1): $\frac{d}{dx} \int_7^x \tan(t) dt$

2. Evaluate using the Fundamental Theorem of Calculus (part 2) (i.e. antiderivatives): $\int_4^9 \sqrt{x} dx$

$$\boxed{1} \quad \frac{d}{dx} \int_7^x \tan(t) dt = \boxed{\tan(x)}$$

$$\boxed{2} \quad \int_4^9 x^{1/2} dx = \left. \frac{2}{3} x^{3/2} \right|_4^9 = \frac{2}{3} \left[(\sqrt{9})^3 - (\sqrt{4})^3 \right]$$

$$= \frac{2}{3} \left[3^3 - 2^3 \right] = \frac{2}{3} \left[27 - 8 \right] = \frac{2}{3} \left[19 \right]$$

$$= \boxed{\frac{38}{3}}$$