

## Quiz 22

$$1. \quad (a) \quad \frac{d}{dx} \left( \int_0^x t^3 - 7 \tan t \, dt \right) = \overset{\text{FTC}}{x^3 - 7 \tan x}$$

$$(b) \quad F(x) = \int_0^u \sqrt{1+t^2} \, dt, \quad u = \sin x \Rightarrow$$

$$\frac{dF}{dx} = \frac{dF}{du} \cdot \frac{du}{dx} = \sqrt{1+u^2} \cdot \cos x =$$
$$\sqrt{1+\sin^2 x} \cdot \cos x$$

$$2. \quad \int_1^3 4x - x^2 \, dx = \left. 2x^2 - \frac{1}{3}x^3 \right|_1^3 =$$

$$(18 - 9) - \left( 2 - \frac{1}{3} \right) =$$

$$9 - 2 + \frac{1}{3} = 7 + \frac{1}{3} = \frac{22}{3}.$$