Q11 $\frac{d}{dx}\left(\int_x^{\pi} \sqrt{1+\sec t}\, dt\right) = \frac{d}{dx}\left(-\int_{\pi}^{x} \sqrt{1+\sec t}\, dt\right)$

Fund Thm $= -\sqrt{1+\sec(x)}$

Q16 $\frac{d}{dx}\left(\int_0^{x^4} \cos^2(\theta)\, d\theta\right) = \frac{d}{du}\left(\int_0^{u} \cos^2(\theta)\, d\theta\right) \cdot \frac{du}{dx}$

$u = x^4$ Ch. Rule

Fund. Thm. $= \cos^2(u)\, \frac{du}{dx}$

$= \cos^2(x^4) \cdot 4x^3$

$= 4x^3 \cos^2(x^4)$

Q20 $\int_{-1}^{1} x^{100}\, dx = \frac{x^{101}}{101}\Big]_{-1}^{1} = \frac{1}{101} - \frac{(-1)}{101}$

$= \boxed{\frac{2}{101}}$

Q26 $\int_{-5}^{5} \pi\, dx = \pi x\Big]_{-5}^{5} = 5\pi - (-5\pi)$

$= \boxed{10\pi}$

Q61 $\lim_{n\to\infty} \sum_{i=1}^{n} \frac{i^3}{n^4} = \lim_{n\to\infty} \sum_{i=1}^{n} \left(\frac{i}{n}\right)^3 \cdot \frac{1}{n} = \int_0^1 x^3\, dx = \frac{x^4}{4}\Big]_0^1 = \boxed{\frac{1}{4}}$