11) $\frac{d}{dx}\int_1^{3x} \frac{\sin(3t)}{t}\,dt$

$= \frac{\sin(3\cdot 3x)\cdot 3}{3x} = \frac{\sin(9x)}{x}$

* 12) $\frac{d}{dx}\int_{3x}^{x^2} \sqrt{1+t^2}\,dt$

$= \frac{d}{dx}\left[\int_0^{x^2} \sqrt{1+t^2}\,dt + \int_{3x}^{0} \sqrt{1+t^2}\,dt\right]$

$= \frac{d}{dx}\left[\int_0^{x^2} \sqrt{1+t^2}\,dt - \int_0^{3x} \sqrt{1+t^2}\,dt\right]$

$= \sqrt{1+(x^2)^2}\cdot 2x - \sqrt{1+(3x)^2}\cdot 3$

$2x\sqrt{1+x^4} - 3\sqrt{1+9x^2}$

*
13) $\frac{d}{dt}\int_{t^2}^{5} \sin^2(3x)\,dx = -\frac{d}{dt}\int_5^{t^2} \sin^2(3x)\,dx$

$= -\sin^2(3\cdot t^2)\cdot 2t$

$= -2t\sin^2(3t^2)$