Find the derivative of each function

7) $g(x) = \displaystyle\int_1^x \dfrac{1}{t^3+1}\,dt$

8) $g(x) = \displaystyle\int_1^x e^{t^2-t}\,dt$

11) $F(x) = \displaystyle\int_x^\pi \sqrt{1+\sec t}\ dt$

13) $h(x) = \displaystyle\int_2^{1/x} \arctan(t)\,dt$

14) $h(x) = \displaystyle\int_0^{x^2} \sqrt{1+r^3}\ dr$

15) $y = \displaystyle\int_0^{\tan x} \sqrt{t+\sqrt{t}}\ dt$

16) $y = \int_{e^x}^{0} \sin^3(t)\, dt$

18) $y = \int_{\sin x}^{\cos x} (1+v^2)^{10}\, dv$

24) Find the slope of the tangent line to the curve with parametric equations at the point $(0,1)$

$x = \int_{0}^{t} \sqrt{1+u^3}\, du$ $\qquad\qquad$ $y = 1 + 2t + t^3$