Sec 5.4 day 1 page 373 (1-13 odd)

① One process "undoes" what the other one does.

③ a) $g(0) = \int_0^0 f(t)\,dt = 0$

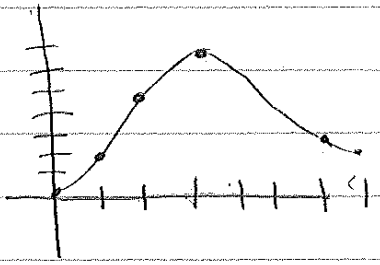
$g(1) = \int_0^1 f(t)\,dt = 2$

$g(2) = \int_0^2 f(t)\,dt = 5$

$g(3) = \int_0^3 f(t)\,dt = 7$

$g(6) = \int_0^4 f(t)\,dt = 3$

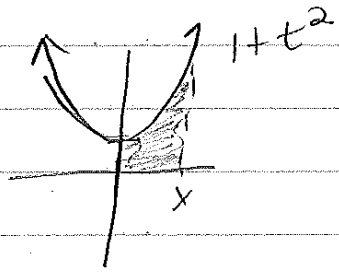
d)



b) ↑ $(0,3)$

c) $g(3)$

⑤



a) By FTCPI

$\boxed{g'(x) = 1 + x^2}$

b) $\int_0^x (1+t^2)\,dt = g(x) = t + \frac{t^3}{3}\Big]_0^x = x + \frac{x^3}{3} - 0$

$g(x) = x + \frac{x^3}{3} \Rightarrow \boxed{g'(x) = 1 + x^2}$

⑦ $g(x) = \int_1^x \frac{1}{t^3+1}\,dt \Rightarrow \boxed{\frac{1}{x^3+1}\,g'(x)}$

⑨ $g(y) = \int_2^y t^2 \sin t\,dt \Rightarrow \boxed{g'(y) = y^2 \sin y}$

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

(not a constant)

so $F(x) = -\int_{\pi}^{x} \sqrt{1+\sec t}\, dt$

$$\boxed{F'(x) = -\sqrt{1+\sec x}}$$

(13) $h(x) = \int_{2}^{1/x} \arctan t\, dt$ (not x)

so $h'(x) = \left(\arctan\left(\frac{1}{x}\right)\right)\left(-\frac{1}{x^2}\right)$

$$\boxed{\therefore h'(x) = \frac{-\arctan\left(\frac{1}{x}\right)}{x^2}}$$