Soluție

1.a) $f'(x)=1+\frac{1}{2\sqrt{x}}$.

b) $f'(x)>0$ oricare ar fi $x>0 \Rightarrow f$ crescătoare.

c) $f'(x)=\frac{3}{2} \Leftrightarrow 1+\frac{1}{2\sqrt{x}}=\frac{3}{2} \Rightarrow x=1;\ f(1)=2 \Rightarrow A(1,2)$.

2.a) $\frac{1}{x+1}+\frac{1}{x+2}=\frac{2x+3}{x^2+3x+2}=f(x) \Rightarrow \int (x+1)(x+2)\,f(x)\,dx=x^2+3x+\mathcal{C}$.

b) $\int_0^1 f(x)\,dx=\ln\left[(x+1)\cdot(x+2)\right]\Big|_0^1=\ln 3$.

c) $h(x)=-\frac{1}{x+3} \Rightarrow V=\pi\int_0^1 \frac{1}{(x+3)^2}\,dx=\pi\cdot\frac{-1}{x+3}\Big|_0^1=\frac{\pi}{12}$.