▌ Rješenja zadataka 5.2

Zadatak 1.   Provjeri da je funkcija F primitivna funkcija funkcije f na danom intervalu:

1) $F(x) = \sqrt{2x-3}$, $f(x) = \dfrac{1}{\sqrt{2x-3}}$,

$x \in \langle \frac{3}{2}, +\infty \rangle$;

2) $F(x) = (x-1)\sqrt{2-x}$,

$f(x) = \sqrt{2-x} - \dfrac{x-1}{2\sqrt{2-x}}$, $x \in \langle -\infty, 2 \rangle$;

3) $F(x) = \sqrt{x} \cdot \sin x$,

$f(x) = \dfrac{\sin x}{2\sqrt{x}} + \sqrt{x} \cdot \cos x$, $x \in \langle 0, +\infty \rangle$;

4) $F(x) = x\sqrt{\ln x}$; $f(x) = \dfrac{1 + 2\ln x}{2\sqrt{\ln x}}$,

$x \in \langle 1, +\infty \rangle$.

Rješenje.   **1)** $F'(x) = \dfrac{1}{2\sqrt{2x-3}} \cdot 2 = \dfrac{1}{\sqrt{2x-3}} = f(x)$;

2) $F'(x) = \sqrt{2-x} + (x-1) \cdot \dfrac{1}{2\sqrt{2-x}} \cdot (-1) = \sqrt{2-x} - \dfrac{x-1}{2\sqrt{2-x}} = f(x)$;

3) $F'(x) = \dfrac{1}{2\sqrt{x}} \cdot \sin x + \sqrt{x} \cdot \cos x = \dfrac{\sin x}{2\sqrt{x}} + \sqrt{x} \cos x = f(x)$;

4) $F'(x) = \sqrt{\ln x} + x \cdot \dfrac{1}{2\sqrt{\ln x}} \cdot \dfrac{1}{x} = \dfrac{2\ln x + 1}{2\sqrt{\ln x}} = f(x)$.