Zadatak 2.   Provjeri da je F primitivna funkcija funkcije f :

1) $F(x) = xe^x + 1$, $f(x) = e^x(1+x)$;

2) $F(x) = \sin x \cos x$, $f(x) = \cos 2x$;

3) $F(x) = \ln(e^x + e^{-x})$, $f(x) = \dfrac{e^x - e^{-x}}{e^x + e^{-x}}$;

4) $F(x) = 1 - \ln \cos x$, $f(x) = \operatorname{tg} x$;

5) $F(x) = x \ln x - x$, $f(x) = \ln x$;

6) $F(x) = 2x - \sin 2x$, $f(x) = 4 \sin^2 x$.

Rješenje.   **1)** $F'(x) = e^x + xe^x = e^x(x+1) = f(x)$;

2) $F'(x) = \cos^2 x - \sin^2 x = \cos 2x = f(x)$;

3) $F'(x) = \dfrac{1}{e^x + e^{-x}} \cdot (e^x - e^{-x}) = f(x)$;

4) $F'(x) = -\dfrac{1}{\cos x} \cdot (\sin x) = \dfrac{\sin x}{\cos x} = \operatorname{tg} x = f(x)$;

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

6) $F'(x) = 2 - 2\cos 2x = 2(1 - \cos 2x) = 2(1 - \cos^2 x + \sin^2 x) = 2(\sin^2 x + \sin^2 x) = 2 \cdot 2 \sin^2 x = 4 \sin^2 x = f(x)$.