

تمارين 4.3

1. احسب مشتقات الدوال التالية :

$$\begin{aligned}
 (1) f(x) &= \sqrt{x} \sin^{-1}(5x) & (2) f(x) &= \ln|3x-1| \cos^{-1}(\sqrt{x}) \\
 (3) f(x) &= \ln|x^3 + \tan^{-1}(2x)| & (4) f(x) &= \cot^{-1}(e^{3x}) + 5\sqrt[3]{x} \\
 (5) f(x) &= e^{\sec^{-1}(4x)} & (6) f(x) &= \left(\csc^{-1}\left(\frac{1}{x}\right) + x^4 \right)^7
 \end{aligned}$$

2. احسب التكاملات التالية :

$$\begin{aligned}
 (1) \int \frac{x}{\sqrt{25-9x^4}} dx & & (2) \int \frac{5x^2}{x^6+36} dx \\
 (3) \int \frac{1}{x\sqrt{x^8-16}} dx & & (4) \int \frac{3x}{\sqrt{4-(x^2+1)^2}} dx \\
 (5) \int \frac{\cos x}{1+\sin^2 x} dx & & (6) \int \frac{7}{25+(x-1)^2} dx \\
 (7) \int \frac{1}{\sqrt{e^{4x}-16}} dx & & (8) \int \frac{1}{x\sqrt{x^3-36}} dx \\
 (9) \int \frac{2}{\sqrt{-x^2+2x+8}} dx & & (10) \int \frac{3}{x^2+4x+13} dx \\
 (11) \int \frac{5}{(x-2)\sqrt{x^2-4x}} dx & & (12) \int \frac{\sin^{-1} x}{\sqrt{1-x^2}} dx \\
 (13) \int \frac{x-4}{\sqrt{9-x^2}} dx & & (14) \int \frac{x+5}{x^2+36} dx \\
 (15) \int \frac{(1+\tan^{-1} x)^2}{1+x^2} dx & & (16) \int \frac{3-\sin^{-1} x}{\sqrt{1-x^2}} dx
 \end{aligned}$$