Esercizi su: Derivate.

1. Deriva le seguenti funzioni monomiali.

   (a) $f(x) = x - 4$ [1]
   (b) $f(x) = 3x + 1$ [3]
   (c) $f(x) = 4x + 6$ [4]
   (d) $f(x) = 6x + 1$ [6]
   (e) $f(x) = 4x + 5$ [4]
   (f) $f(x) = 5x + 1$ [5]
   (g) $f(x) = 4x + 2$ [4]
   (h) $f(x) = 4x - 5$ [4]
   (i) $f(x) = 6x + 5$ [6]
   (j) $f(x) = 6x + 1$ [6]
   (k) $f(x) = 5x + 1$ [5]
   (l) $f(x) = 4x + 3$ [4]
   (m) $f(x) = -5x - 3$ [−5]
   (n) $f(x) = -4x + 2$ [−4]
   (o) $f(x) = -2x + 4$ [−2]
   (p) $f(x) = -6x + 2$ [−6]
   (q) $f(x) = -2x + 5$ [−2]
   (r) $f(x) = -2x - 1$ [−2]
   (s) $f(x) = -3x + 1$ [−3]
   (t) $f(x) = -6x - 2$ [−6]
   (u) $f(x) = -4x + 4$ [−4]
   (v) $f(x) = -4x + 5$ [−4]
   (w) $f(x) = -3x - 2$ [−3]
   (x) $f(x) = -6x - 4$ [−6]
   (y) $f(x) = -5x + 2$ [−5]
   (z) $f(x) = -5x + 5$ [−5]

2. Deriva le seguenti funzioni monomiali.

   (a) $f(x) = x - 1$ [1]
   (b) $f(x) = x + 5$ [1]
   (c) $f(x) = -6x + 4$ [−6]
   (d) $f(x) = x + \frac{5}{2}$ [1]
   (e) $f(x) = x - \frac{1}{2}$ [1]
   (f) $f(x) = x - \frac{5}{3}$ [1]
   (g) $f(x) = 2x + \frac{2}{3}$ [2]
   (h) $f(x) = 2x + \frac{3}{2}$ [2]
   (i) $f(x) = 3x - \frac{1}{3}$ [3]
   (j) $f(x) = 2x - \frac{1}{5}$ [2]

(k) $f(x) = 6x + \frac{1}{2}$ [6]

(l) $f(x) = -x - \frac{3}{2}$ $[-1]$

(m) $f(x) = -x + \frac{5}{6}$ $[-1]$

(n) $f(x) = \frac{x}{3} + 1$ $[\frac{1}{3}]$

(o) $f(x) = \frac{x}{2} + 1$ $[\frac{1}{2}]$

(p) $f(x) = \frac{2x}{5} - 3$ $[\frac{2}{5}]$

(q) $f(x) = \frac{2x}{5} - 1$ $[\frac{2}{5}]$

(r) $f(x) = \frac{3x}{2} - 1$ $[\frac{3}{2}]$

(s) $f(x) = \frac{2x}{5} + 2$ $[\frac{2}{5}]$

(t) $f(x) = -\frac{5x}{6} - 6$ $[-\frac{5}{6}]$

(u) $f(x) = -\frac{4x}{5} - 2$ $[-\frac{4}{5}]$

(v) $f(x) = -\frac{2x}{3} - 1$ $[-\frac{2}{3}]$

(w) $f(x) = -\frac{5x}{4} + 3$ $[-\frac{5}{4}]$

(x) $f(x) = \frac{x}{6} + \frac{5}{6}$ $[\frac{1}{6}]$

(y) $f(x) = \frac{6x}{5} + \frac{2}{5}$ $[\frac{6}{5}]$

(z) $f(x) = \frac{3x}{2} + \frac{1}{3}$ $[\frac{3}{2}]$

3. Deriva le seguenti funzioni con radici.

(a) $f(x) = 2\sqrt{x} + 4$ $[\frac{1}{\sqrt{x}}]$

(b) $f(x) = \sqrt{x} - 3$ $[\frac{1}{2\sqrt{x}}]$

(c) $f(x) = \sqrt{x} + 4$ $[\frac{1}{2\sqrt{x}}]$

(d) $f(x) = 2\sqrt{x} - 2$ $[\frac{1}{\sqrt{x}}]$

(e) $f(x) = \sqrt{x} + 5$ $[\frac{1}{2\sqrt{x}}]$

(f) $f(x) = \sqrt{-x} + 4$ $[\frac{\sqrt{-x}}{2x}]$

(g) $f(x) = \sqrt{-x} - 4$ $[\frac{\sqrt{-x}}{2x}]$

(h) $f(x) = 2\sqrt{-x} + 5$ $[\frac{\sqrt{-x}}{x}]$

(i) $f(x) = \sqrt{-x} + 3$ $[\frac{\sqrt{-x}}{2x}]$

(j) $f(x) = 2\sqrt{-x} + 6$ $[\frac{\sqrt{-x}}{x}]$

(k) $f(x) = 2\sqrt{-x} - 2$ $[\frac{\sqrt{-x}}{x}]$

(l) $f(x) = \sqrt{6}\sqrt{x} + 5$ $[\frac{\sqrt{6}}{2\sqrt{x}}]$

(m) $f(x) = \sqrt{6}\sqrt{x} + 1$ $[\frac{\sqrt{6}}{2\sqrt{x}}]$

(n) $f(x) = \sqrt{2}\sqrt{x} - 2$ $[\frac{\sqrt{2}}{2\sqrt{x}}]$

(o) $f(x) = \sqrt{6}\sqrt{x} + 2$ $[\frac{\sqrt{6}}{2\sqrt{x}}]$

(p) $f(x) = \sqrt{5}\sqrt{x} - 2$ $[\frac{\sqrt{5}}{2\sqrt{x}}]$

(q) $f(x) = \sqrt{5}\sqrt{x} - 4$ $[\frac{\sqrt{5}}{2\sqrt{x}}]$

(r) $f(x) = \sqrt{3}\sqrt{x} - 2$ $[\frac{\sqrt{3}}{2\sqrt{x}}]$

(s) $f(x) = \sqrt{2}\sqrt{x} - 3$ $[\frac{\sqrt{2}}{2\sqrt{x}}]$

(t) $f(x) = \sqrt{2}\sqrt{x} - 5$ $[\frac{\sqrt{2}}{2\sqrt{x}}]$

(u) $f(x) = \sqrt{6}\sqrt{-x} + 6$ $[\frac{\sqrt{6}\sqrt{-x}}{2x}]$

(v) $f(x) = \sqrt{6}\sqrt{-x} - 5$ $[\frac{\sqrt{6}\sqrt{-x}}{2x}]$

(w) $f(x) = \sqrt{3}\sqrt{-x} + 4$ $[\frac{\sqrt{3}\sqrt{-x}}{2x}]$

(x) $f(x) = \sqrt{6}\sqrt{-x} + 1$ $[\frac{\sqrt{6}\sqrt{-x}}{2x}]$

(y) $f(x) = \sqrt{2}\sqrt{-x} + 4$ $[\frac{\sqrt{2}\sqrt{-x}}{2x}]$

(z) $f(x) = \sqrt{6}\sqrt{-x} - 3$ $[\frac{\sqrt{6}\sqrt{-x}}{2x}]$

4. Deriva le seguenti funzioni con radici.

(a) $f(x) = \sqrt{x} + 1$ $[\frac{1}{2\sqrt{x}}]$

(b) $f(x) = \sqrt{-x} - 1$ $[\frac{\sqrt{-x}}{2x}]$

(c) $f(x) = \sqrt{-x} + 3$ $[\frac{\sqrt{-x}}{2x}]$

(d) $f(x) = \sqrt{x} - \frac{1}{3}$ $[\frac{1}{2\sqrt{x}}]$

(e) $f(x) = \sqrt{2}\sqrt{x} - 1$ $[\frac{\sqrt{2}}{2\sqrt{x}}]$

(f) $f(x) = \sqrt{3}\sqrt{x} - \frac{1}{3}$ $[\frac{\sqrt{3}}{2\sqrt{x}}]$

(g) $f(x) = \sqrt{6}\sqrt{x} - \frac{3}{4}$ $[\frac{\sqrt{6}}{2\sqrt{x}}]$

(h) $f(x) = \frac{\sqrt{5}\sqrt{x}}{2} - 6$ $[\frac{\sqrt{5}}{4\sqrt{x}}]$

(i) $f(x) = \frac{\sqrt{10}\sqrt{x}}{2} - 1$ $[\frac{\sqrt{10}}{4\sqrt{x}}]$

(j) $f(x) = \frac{\sqrt{10}\sqrt{x}}{5} + 5$ $[\frac{\sqrt{10}}{10\sqrt{x}}]$

(k) $f(x) = \frac{\sqrt{5}}{2}\sqrt{-x} + 4$ $[\frac{\sqrt{5}\sqrt{-x}}{4x}]$

(l) $f(x) = \sqrt{5}\sqrt{-x} + \frac{1}{5}$ $[\frac{\sqrt{5}\sqrt{-x}}{2x}]$

(m) $f(x) = \frac{\sqrt{6}}{2}\sqrt{-x} - 2$ $[\frac{\sqrt{6}\sqrt{-x}}{4x}]$

(n) $f(x) = \sqrt{5}\sqrt{-x} + \frac{1}{2}$ $[\frac{\sqrt{5}\sqrt{-x}}{2x}]$

(o) $f(x) = \sqrt{3}\sqrt{-x} - \frac{3}{4}$ $[\frac{\sqrt{3}\sqrt{-x}}{2x}]$

(p) $f(x) = \sqrt{3}\sqrt{-x} + \frac{3}{2}$ $[\frac{\sqrt{3}\sqrt{-x}}{2x}]$

(q) $f(x) = \sqrt{2}\sqrt{-x} + \frac{4}{3}$ $[\frac{\sqrt{2}\sqrt{-x}}{2x}]$

(r) $f(x) = \frac{\sqrt{6}}{3}\sqrt{-x} + 3$ $[\frac{\sqrt{6}\sqrt{-x}}{6x}]$

(s) $f(x) = \frac{\sqrt{30}}{6}\sqrt{-x} - 2$ $[\frac{\sqrt{30}\sqrt{-x}}{12x}]$

(t) $f(x) = \frac{\sqrt{30}}{6}\sqrt{-x} - 1$ $[\frac{\sqrt{30}\sqrt{-x}}{12x}]$

(u) $f(x) = \frac{\sqrt{10}\sqrt{x}}{5} + \frac{5}{3}$ $[\frac{\sqrt{10}}{10\sqrt{x}}]$

(v) $f(x) = \frac{\sqrt{6}}{3}\sqrt{-x} - \frac{5}{4}$ $[\frac{\sqrt{6}\sqrt{-x}}{6x}]$

(w) $f(x) = \frac{\sqrt{2}}{2}\sqrt{-x} - \frac{5}{6}$ $[\frac{\sqrt{2}\sqrt{-x}}{4x}]$

(x) $f(x) = \frac{\sqrt{6}}{2}\sqrt{-x} + \frac{2}{5}$ $[\frac{\sqrt{6}\sqrt{-x}}{4x}]$

(y) $f(x) = \frac{\sqrt{5}}{5}\sqrt{-x} + \frac{1}{6}$ $[\frac{\sqrt{5}\sqrt{-x}}{10x}]$

(z) $f(x) = \frac{\sqrt{15}}{3}\sqrt{-x} - \frac{1}{5}$ $[\frac{\sqrt{15}\sqrt{-x}}{6x}]$

5. Deriva le seguenti funzioni esponenziali.

(a) $f(x) = 4e^x$ $[4e^x]$

(b) $f(x) = 2e^{3x}$ $[6e^{3x}]$

(c) $f(x) = 4e^{5x}$ $[20e^{5x}]$

(d) $f(x) = 5e^{5x}$ $[25e^{5x}]$

(e) $f(x) = -e^{2x}$ $[-2e^{2x}]$

(f) $f(x) = -e^{5x}$ $[-5e^{5x}]$

(g) $f(x) = -6e^{3x}$ $[-18e^{3x}]$

(h) $f(x) = -3e^{-2x}$ $[6e^{-2x}]$

(i) $f(x) = 3e^{-4x}$ $[-12e^{-4x}]$

(j) $f(x) = -3e^{-6x}$ $[18e^{-6x}]$

(k) $f(x) = -5^x$ $[-5^x \ln(5)]$

(l) $f(x) = 5^{6x}$ $[6 \cdot 5^{6x} \ln(5)]$

(m) $f(x) = -6^{2x}$ $[-2 \cdot 6^{2x} \ln(6)]$

(n) $f(x) = 3 \cdot 6^{3x}$ $[9 \cdot 6^{3x} \ln(6)]$

(o) $f(x) = -5 \cdot 5^x$ $[-5 \cdot 5^x \ln(5)]$

(p) $f(x) = 2 \cdot 4^{3x}$ $[6 \cdot 4^{3x} \ln(4)]$

(q) $f(x) = 2 \cdot 4^{6x}$ $[12 \cdot 4^{6x} \ln(4)]$

(r) $f(x) = -2 \cdot 6^{2x}$ $[-4 \cdot 6^{2x} \ln(6)]$

(s) $f(x) = -6 \cdot 4^{3x}$ $[-18 \cdot 4^{3x} \ln(4)]$

(t) $f(x) = -2 \cdot 6^{6x}$ $[-12 \cdot 6^{6x} \ln(6)]$

(u) $f(x) = -3 \cdot 2^{-3x}$ $[9 \cdot 2^{-3x} \ln(2)]$

(v) $f(x) = 4 \cdot 3^{-4x}$ $[-16 \cdot 3^{-4x} \ln(3)]$

(w) $f(x) = 4 \cdot 2^{-4x}$ $[-16 \cdot 2^{-4x} \ln(2)]$

(x) $f(x) = -5 \cdot 5^{-5x}$ $[25 \cdot 5^{-5x} \ln(5)]$

(y) $f(x) = 5 \cdot 5^{-4x}$ $[-20 \cdot 5^{-4x} \ln(5)]$

(z) $f(x) = 5 \cdot 2^{-2x}$ $[-10 \cdot 2^{-2x} \ln(2)]$

6. Deriva le seguenti funzioni esponenziali.

(a) $f(x) = e^{-5x}$ $[-5e^{-5x}]$

(b) $f(x) = -\frac{e^{-x}}{2}$ $[\frac{e^{-x}}{2}]$

(c) $f(x) = -\frac{1}{6}e^{-5x}$ $[\frac{5}{6}e^{-5x}]$

(d) $f(x) = -4e^{-\frac{5x}{2}}$ $[10e^{-\frac{5x}{2}}]$

(e) $f(x) = 2e^{\frac{3x}{4}}$ $[\frac{3}{2}e^{\frac{3x}{4}}]$

(f) $f(x) = 5e^{-\frac{2x}{3}}$ $[-\frac{10}{3}e^{-\frac{2x}{3}}]$

(g) $f(x) = \frac{5}{2}e^{\frac{3x}{5}}$ $[\frac{3}{2}e^{\frac{3x}{5}}]$

(h) $f(x) = \frac{5^{-x}}{3}$ $[-\frac{5^{-x}}{3}\ln(5)]$

(i) $f(x) = -\frac{3}{2}5^{2x}$ $[-3\cdot 5^{2x}\ln(5)]$

(j) $f(x) = -\frac{5}{2}4^{x}$ $[-\frac{5}{2}4^{x}\ln(4)]$

(k) $f(x) = -\frac{6}{5}e^{\frac{3x}{2}}$ $[-\frac{9}{5}e^{\frac{3x}{2}}]$

(l) $f(x) = \frac{6}{5}3^{2x}$ $[\frac{12}{5}3^{2x}\ln(3)]$

(m) $f(x) = \frac{3}{4}2^{-4x}$ $[-3\cdot 2^{-4x}\ln(2)]$

(n) $f(x) = \frac{5}{4}e^{-\frac{3x}{2}}$ $[-\frac{15}{8}e^{-\frac{3x}{2}}]$

(o) $f(x) = -\frac{2}{3}6^{5x}$ $[-\frac{10}{3}6^{5x}\ln(6)]$

(p) $f(x) = -6^{\frac{5x}{6}}$ $[-\frac{5}{6}6^{\frac{5x}{6}}\ln(6)]$

(q) $f(x) = \frac{6}{5}6^{\frac{5x}{3}}$ $[2\cdot 6^{\frac{5x}{3}}\ln(6)]$

(r) $f(x) = \frac{4}{3}4^{\frac{3x}{2}}$ $[2\cdot 4^{\frac{3x}{2}}\ln(4)]$

(s) $f(x) = -2\cdot 2^{-\frac{3x}{2}}$ $[3\cdot 2^{-\frac{3x}{2}}\ln(2)]$

(t) $f(x) = \frac{5}{2}5^{\frac{2x}{3}}$ $[\frac{5}{3}5^{\frac{2x}{3}}\ln(5)]$

(u) $f(x) = -2\cdot 6^{-\frac{2x}{3}}$ $[\frac{4}{3}6^{-\frac{2x}{3}}\ln(6)]$

(v) $f(x) = -\frac{3}{2}3^{-\frac{x}{4}}$ $[\frac{3}{8}3^{-\frac{x}{4}}\ln(3)]$

(w) $f(x) = -\frac{3^{\frac{4x}{5}}}{3}$ $[-\frac{4}{15}3^{\frac{4x}{5}}\ln(3)]$

(x) $f(x) = 2\cdot 4^{-\frac{5x}{3}}$ $[-\frac{10}{3}4^{-\frac{5x}{3}}\ln(4)]$

(y) $f(x) = -\frac{1}{2}5^{-\frac{4x}{3}}$ $[\frac{2}{3}5^{-\frac{4x}{3}}\ln(5)]$

(z) $f(x) = \frac{1}{3}5^{-\frac{3x}{5}}$ $[-\frac{1}{5}5^{-\frac{3x}{5}}\ln(5)]$

7. Deriva le seguenti funzioni logaritmiche.

(a) $f(x) = 4\log(3x)$ $[\frac{4}{x}]$

(b) $f(x) = \log(-4x)$ $[\frac{1}{x}]$

(c) $f(x) = 2\log(4x)$ $[\frac{2}{x}]$

(d) $f(x) = 6\log(3x)$ $[\frac{6}{x}]$

(e) $f(x) = 6\log(5x)$ $[\frac{6}{x}]$

(f) $f(x) = 6\log(5x)$ $[\frac{6}{x}]$

(g) $f(x) = 2\log(5x)$ $[\frac{2}{x}]$

(h) $f(x) = -\log(2x)$ $[-\frac{1}{x}]$

(i) $f(x) = -\log(3x)$ $[-\frac{1}{x}]$

(j) $f(x) = -4\log(x)$ $[-\frac{4}{x}]$

(k) $f(x) = 6\log(-2x)$ $[\frac{6}{x}]$

(l) $f(x) = 3\log(-2x)$ $[\frac{3}{x}]$

(m) $f(x) = -4\log(x)$ $[-\frac{4}{x}]$

(n) $f(x) = 6\log(-6x)$ $[\frac{6}{x}]$

(o) $f(x) = 6\log(-5x)$ $[\frac{6}{x}]$

(p) $f(x) = 3\log(-6x)$ $[\frac{3}{x}]$

(q) $f(x) = -4\log(5x)$ $[-\frac{4}{x}]$

(r) $f(x) = -2\log(6x)$ $[-\frac{2}{x}]$

(s) $f(x) = -2\log(6x)$ $[-\frac{2}{x}]$

(t) $f(x) = -6\log(4x)$ $[-\frac{6}{x}]$

(u) $f(x) = -2\log(4x)$ $[-\frac{2}{x}]$

(v) $f(x) = -\log(-6x)$ $[-\frac{1}{x}]$

(w) $f(x) = -3\log(-3x)$ $[-\frac{3}{x}]$

(x) $f(x) = -6\log(-2x)$ $[-\frac{6}{x}]$

(y) $f(x) = -2\log(-5x)$ $[-\frac{2}{x}]$

(z) $f(x) = -6\log(-6x)$ $[-\frac{6}{x}]$

8. Deriva le seguenti funzioni logaritmiche.

(a) $f(x) = \log(-x)$ $[\frac{1}{x}]$

(b) $f(x) = -\log(x)$ $[-\frac{1}{x}]$

(c) $f(x) = -\log(x)$ $[-\frac{1}{x}]$

(d) $f(x) = 2\log\left(\frac{5x}{2}\right)$ $[\frac{2}{x}]$

(e) $f(x) = 2\log\left(\frac{2x}{3}\right)$ $[\frac{2}{x}]$

(f) $f(x) = 5\log\left(-\frac{4x}{3}\right)$ $[\frac{5}{x}]$

(g) $f(x) = \frac{3}{2}\log(4x)$ $[\frac{3}{2x}]$

(h) $f(x) = 2\log\left(-\frac{2x}{3}\right)$ $[\frac{2}{x}]$

(i) $f(x) = -\log\left(\frac{3x}{2}\right)$ $[-\frac{1}{x}]$

(j) $f(x) = -\frac{5}{3}\log(x)$ $[-\frac{5}{3x}]$

(k) $f(x) = \frac{1}{4}\log(-3x)$ $[\frac{1}{4x}]$

(l) $f(x) = \frac{3}{4}\log(-2x)$ $[\frac{3}{4x}]$

(m) $f(x) = -2\log\left(-\frac{3x}{2}\right)$ $[-\frac{2}{x}]$

(n) $f(x) = -\frac{5}{6}\log(-5x)$ $[-\frac{5}{6x}]$

(o) $f(x) = -\frac{1}{5}\log(-2x)$ $[-\frac{1}{5x}]$

(p) $f(x) = \frac{1}{2}\log\left(\frac{2x}{5}\right)$ $[\frac{1}{2x}]$

(q) $f(x) = \frac{3}{4}\log\left(-\frac{x}{3}\right)$ $[\frac{3}{4x}]$

(r) $f(x) = \frac{1}{2}\log\left(\frac{5x}{6}\right)$ $[\frac{1}{2x}]$

(s) $f(x) = \frac{1}{2}\log\left(-\frac{3x}{2}\right)$ $[\frac{1}{2x}]$

(t) $f(x) = \frac{1}{4}\log\left(-\frac{3x}{2}\right)$ $[\frac{1}{4x}]$

(u) $f(x) = -\frac{1}{2}\log\left(\frac{2x}{3}\right)$ $[-\frac{1}{2x}]$

(v) $f(x) = -\frac{3}{2}\log\left(-\frac{5x}{4}\right)$ $[-\frac{3}{2x}]$

(w) $f(x) = -\frac{1}{2}\log\left(-\frac{5x}{2}\right)$ $[-\frac{1}{2x}]$

(x) $f(x) = -\frac{1}{3}\log\left(-\frac{5x}{3}\right)$ $[-\frac{1}{3x}]$

(y) $f(x) = -\frac{5}{6}\log\left(-\frac{6x}{5}\right)$ $[-\frac{5}{6x}]$

(z) $f(x) = -\frac{3}{2}\log\left(-\frac{5x}{2}\right)$ $[-\frac{3}{2x}]$

9. Deriva le seguenti funzioni goniometriche.

(a) $f(x) = \sin(x)$ $[\cos(x)]$

(b) $f(x) = -\cos(x)$ $[\sin(x)]$

(c) $f(x) = -\sin(x)$ $[-\cos(x)]$

(d) $f(x) = 4\sin(x)$ $[4\cos(x)]$

(e) $f(x) = -3\cos(x)$ $[3\sin(x)]$

(f) $f(x) = 5\cos(x)$ $[-5\sin(x)]$

(g) $f(x) = -2\cos(x)$ $[2\sin(x)]$

(h) $f(x) = -3\cos(x)$ $[3\sin(x)]$

(i) $f(x) = 3\cos(x)$ $[-3\sin(x)]$

(j) $f(x) = -4\sin(x)$ $[-4\cos(x)]$

(k) $f(x) = \tan(x)$ $[\tan^2(x) + 1]$

(l) $f(x) = -3\sin(x)$ $[-3\cos(x)]$

(m) $f(x) = -2\sin(x)$ $[-2\cos(x)]$

(n) $f(x) = -\cot(x)$ $[\cot^2(x) + 1]$

(o) $f(x) = \cot(x)$ $[-\cot^2(x) - 1]$

(p) $f(x) = 6\tan(x)$ $[6\tan^2(x) + 6]$

(q) $f(x) = 2\tan(x)$ $[2\tan^2(x) + 2]$

(r) $f(x) = 5\tan(x)$ $[5\tan^2(x) + 5]$

(s) $f(x) = 3\cot(x)$ $[-3\cot^2(x) - 3]$

(t) $f(x) = -3\cot(x)$ $[3\cot^2(x) + 3]$

(u) $f(x) = -3\cot(x)$ $[3\cot^2(x) + 3]$

(v) $f(x) = -5\cot(x)$ $[5\cot^2(x) + 5]$

(w) $f(x) = 5\cot(x)$ $[-5\cot^2(x) - 5]$

(x) $f(x) = 4\cot(x)$ $[-4\cot^2(x) - 4]$

(y) $f(x) = -2\tan(x)$ $[-2\tan^2(x) - 2]$

(z) $f(x) = -3\tan(x)$ $[-3\tan^2(x) - 3]$

10. Deriva le seguenti funzioni goniometriche.

(a) $f(x) = -\sin(x)$ $[-\cos(x)]$

(b) $f(x) = -\sin(x)$ $[-\cos(x)]$

(c) $f(x) = 5\sin(x)$ $[5\cos(x)]$

(d) $f(x) = -\sin(x)$ $[-\cos(x)]$

(e) $f(x) = \cot(x)$ $[-\cot^2(x) - 1]$

(f) $f(x) = 5\tan(x)$ $[5\tan^2(x) + 5]$

(g) $f(x) = 3\tan(x)$ $[3\tan^2(x) + 3]$

(h) $f(x) = -2\cot(x)$ $[2\cot^2(x) + 2]$

(i) $f(x) = -6\cot(x)$ $[6\cot^2(x) + 6]$

(j) $f(x) = \frac{5}{6}\sin(x)$ $[\frac{5}{6}\cos(x)]$

(k) $f(x) = \frac{1}{2}\sin(x)$ $[\frac{1}{2}\cos(x)]$

(l) $f(x) = -\frac{3}{2}\cos(x)$ $[\frac{3}{2}\sin(x)]$

(m) $f(x) = \frac{2}{5}\cos(x)$ $[-\frac{2}{5}\sin(x)]$

(n) $f(x) = -\frac{5}{3}\cos(x)$ $[\frac{5}{3}\sin(x)]$

(o) $f(x) = \frac{1}{6}\cos(x)$ $[-\frac{1}{6}\sin(x)]$

(p) $f(x) = -\frac{1}{2}\sin(x)$ $[-\frac{1}{2}\cos(x)]$

(q) $f(x) = -\frac{1}{4}\sin(x)$ $[-\frac{1}{4}\cos(x)]$

(r) $f(x) = -\frac{5}{2}\sin(x)$ $[-\frac{5}{2}\cos(x)]$

(s) $f(x) = \frac{5}{4}\tan(x)$ $[\frac{5}{4}\tan^2(x) + \frac{5}{4}]$

(t) $f(x) = \frac{5}{3}\tan(x)$ $[\frac{5}{3}\tan^2(x) + \frac{5}{3}]$

(u) $f(x) = \frac{1}{4}\cot(x)$ $[-\frac{1}{4}\cot^2(x) - \frac{1}{4}]$

(v) $f(x) = \frac{4}{3}\cot(x)$ $[-\frac{4}{3}\cot^2(x) - \frac{4}{3}]$

(w) $f(x) = -\frac{1}{2}\tan(x)$ $[-\frac{1}{2}\tan^2(x) - \frac{1}{2}]$

(x) $f(x) = -\frac{1}{6}\tan(x)$ $[-\frac{1}{6}\tan^2(x) - \frac{1}{6}]$

(y) $f(x) = -\frac{1}{2}\tan(x)$ $[-\frac{1}{2}\tan^2(x) - \frac{1}{2}]$

(z) $f(x) = -\frac{1}{5}\tan(x)$ $[-\frac{1}{5}\tan^2(x) - \frac{1}{5}]$

11. Deriva le seguenti funzioni goniometriche inverse.

(a) $f(x) = \operatorname{atan}(x)$ $[\frac{1}{x^2+1}]$

(b) $f(x) = 6\operatorname{atan}(x)$ $[\frac{6}{x^2+1}]$

(c) $f(x) = \operatorname{acot}(x)$ $[-\frac{1}{x^2+1}]$

(d) $f(x) = \operatorname{acot}(x)$ $[-\frac{1}{x^2+1}]$

(e) $f(x) = 5\operatorname{atan}(x)$ $[\frac{5}{x^2+1}]$

(f) $f(x) = -\operatorname{acot}(x)$ $[\frac{1}{x^2+1}]$

(g) $f(x) = -2\operatorname{acot}(x)$ $[\frac{2}{x^2+1}]$

(h) $f(x) = -4\operatorname{acot}(x)$ $[\frac{4}{x^2+1}]$

(i) $f(x) = 3\operatorname{acot}(x)$ $[-\frac{3}{x^2+1}]$

(j) $f(x) = 4\operatorname{acot}(x)$ $[-\frac{4}{x^2+1}]$

(k) $f(x) = -5\operatorname{acot}(x)$ $[\frac{5}{x^2+1}]$

(l) $f(x) = -2\operatorname{acot}(x)$ $[\frac{2}{x^2+1}]$

(m) $f(x) = -4\operatorname{atan}(x)$ $[-\frac{4}{x^2+1}]$

(n) $f(x) = -5\operatorname{atan}(x)$ $[-\frac{5}{x^2+1}]$

(o) $f(x) = -5\operatorname{atan}(x)$ $[-\frac{5}{x^2+1}]$

(p) $f(x) = -5\operatorname{atan}(x)$ $[-\frac{5}{x^2+1}]$

(q) $f(x) = -4\operatorname{atan}(x)$ $[-\frac{4}{x^2+1}]$

(r) $f(x) = \operatorname{asin}(x)$ $[\frac{1}{\sqrt{-x^2+1}}]$

(s) $f(x) = -\operatorname{acos}(x)$ $[\frac{1}{\sqrt{-x^2+1}}]$

(t) $f(x) = 5\operatorname{asin}(x)$ $[\frac{5}{\sqrt{-x^2+1}}]$

(u) $f(x) = 2\operatorname{asin}(x)$ $[\frac{2}{\sqrt{-x^2+1}}]$

(v) $f(x) = -4\operatorname{acos}(x)$ $[\frac{4}{\sqrt{-x^2+1}}]$

(w) $f(x) = -4\operatorname{acos}(x)$ $[\frac{4}{\sqrt{-x^2+1}}]$

(x) $f(x) = -\operatorname{asin}(x)$ $[-\frac{1}{\sqrt{-x^2+1}}]$

(y) $f(x) = -4\,\mathrm{asin}\,(x)$ $[-\frac{4}{\sqrt{-x^2+1}}]$

(z) $f(x) = -2\,\mathrm{asin}\,(x)$ $[-\frac{2}{\sqrt{-x^2+1}}]$

12. Deriva le seguenti funzioni goniometriche inverse.

(a) $f(x) = 2\,\mathrm{atan}\,(x)$ $[\frac{2}{x^2+1}]$

(b) $f(x) = -\,\mathrm{acot}\,(x)$ $[\frac{1}{x^2+1}]$

(c) $f(x) = 2\,\mathrm{acot}\,(x)$ $[-\frac{2}{x^2+1}]$

(d) $f(x) = -3\,\mathrm{acot}\,(x)$ $[\frac{3}{x^2+1}]$

(e) $f(x) = -5\,\mathrm{acot}\,(x)$ $[\frac{5}{x^2+1}]$

(f) $f(x) = 5\,\mathrm{asin}\,(x)$ $[\frac{5}{\sqrt{-x^2+1}}]$

(g) $f(x) = -\,\mathrm{acos}\,(x)$ $[\frac{1}{\sqrt{-x^2+1}}]$

(h) $f(x) = \mathrm{acos}\,(x)$ $[-\frac{1}{\sqrt{-x^2+1}}]$

(i) $f(x) = -\,\mathrm{acos}\,(x)$ $[\frac{1}{\sqrt{-x^2+1}}]$

(j) $f(x) = 2\,\mathrm{asin}\,(x)$ $[\frac{2}{\sqrt{-x^2+1}}]$

(k) $f(x) = -\,\mathrm{asin}\,(x)$ $[-\frac{1}{\sqrt{-x^2+1}}]$

(l) $f(x) = -\,\mathrm{asin}\,(x)$ $[-\frac{1}{\sqrt{-x^2+1}}]$

(m) $f(x) = \frac{1}{6}\,\mathrm{asin}\,(x)$ $[\frac{1}{6\sqrt{-x^2+1}}]$

(n) $f(x) = -\frac{5}{2}\,\mathrm{acos}\,(x)$ $[\frac{5}{2\sqrt{-x^2+1}}]$

(o) $f(x) = \frac{3}{2}\,\mathrm{acos}\,(x)$ $[-\frac{3}{2\sqrt{-x^2+1}}]$

(p) $f(x) = \frac{1}{4}\,\mathrm{acos}\,(x)$ $[-\frac{1}{4\sqrt{-x^2+1}}]$

(q) $f(x) = -\frac{4}{5}\,\mathrm{acos}\,(x)$ $[\frac{4}{5\sqrt{-x^2+1}}]$

(r) $f(x) = -\frac{2}{3}\,\mathrm{acos}\,(x)$ $[\frac{2}{3\sqrt{-x^2+1}}]$

(s) $f(x) = \frac{5}{2}\,\mathrm{acos}\,(x)$ $[-\frac{5}{2\sqrt{-x^2+1}}]$

(t) $f(x) = -\frac{2}{3}\,\mathrm{acos}\,(x)$ $[\frac{2}{3\sqrt{-x^2+1}}]$

(u) $f(x) = \frac{3}{4}\,\mathrm{atan}\,(x)$ $[\frac{3}{4(x^2+1)}]$

(v) $f(x) = -\frac{2}{5}\,\mathrm{asin}\,(x)$ $[-\frac{2}{5\sqrt{-x^2+1}}]$

(w) $f(x) = -\frac{1}{2}\,\mathrm{asin}\,(x)$ $[-\frac{1}{2\sqrt{-x^2+1}}]$

(x) $f(x) = \frac{1}{2}\,\mathrm{atan}\,(x)$ $[\frac{1}{2(x^2+1)}]$

(y) $f(x) = \frac{3}{5}\,\mathrm{acot}\,(x)$ $[-\frac{3}{5(x^2+1)}]$

(z) $f(x) = -\frac{2}{3}\,\mathrm{atan}\,(x)$ $[-\frac{2}{3(x^2+1)}]$

13. Deriva le seguenti funzioni.

(a) $f(x) = \frac{2}{5}\,\mathrm{acot}\,(x)$ $[-\frac{2}{5(x^2+1)}]$

(b) $f(x) = 2\tan(x)$ $[2\tan^2(x)+2]$

(c) $f(x) = 4\log(5x)$ $[\frac{4}{x}]$

(d) $f(x) = \frac{1}{6}\log(-x)$ $[\frac{1}{6x}]$

(e) $f(x) = 5x - 6$ [5]

(f) $f(x) = 5\operatorname{acot}(x)$ $[-\frac{5}{x^2+1}]$

(g) $f(x) = 3\log(-2x)$ $[\frac{3}{x}]$

(h) $f(x) = 2x + 5$ [2]

(i) $f(x) = \frac{4x}{3} - \frac{4}{5}$ $[\frac{4}{3}]$

(j) $f(x) = \sqrt{x} + \frac{1}{2}$ $[\frac{1}{2\sqrt{x}}]$

(k) $f(x) = 3 \cdot 2^x$ $[3 \cdot 2^x \ln(2)]$

(l) $f(x) = -\frac{5}{3}\log(2x)$ $[-\frac{5}{3x}]$

(m) $f(x) = -\operatorname{acot}(x)$ $[\frac{1}{x^2+1}]$

(n) $f(x) = -3x + 1$ $[-3]$

(o) $f(x) = \sqrt{5}\sqrt{-x} - 1$ $[\frac{\sqrt{5}\sqrt{-x}}{2x}]$

(p) $f(x) = -3\cot(x)$ $[3\cot^2(x) + 3]$

(q) $f(x) = \sqrt{-x} - 2$ $[\frac{\sqrt{-x}}{2x}]$

(r) $f(x) = \sqrt{x} - 1$ $[\frac{1}{2\sqrt{x}}]$

(s) $f(x) = 5x + 2$ [5]

(t) $f(x) = \sqrt{x} + 1$ $[\frac{1}{2\sqrt{x}}]$

(u) $f(x) = -\frac{1}{6}\log\left(-\frac{x}{2}\right)$ $[-\frac{1}{6x}]$

(v) $f(x) = -4x - 1$ $[-4]$

(w) $f(x) = -6\operatorname{acot}(x)$ $[\frac{6}{x^2+1}]$

(x) $f(x) = \sqrt{6}\sqrt{x} + 2$ $[\frac{\sqrt{6}}{2\sqrt{x}}]$

(y) $f(x) = -\frac{2}{5}\log(-x)$ $[-\frac{2}{5x}]$

(z) $f(x) = \frac{4}{3}e^{6x}$ $[8e^{6x}]$