

# 1 Studi di funzione

1.  $f(x) = \frac{|2x - 3|}{x^2 - 3x + 2}$
2.  $f(x) = e^{-x^2}$
3.  $f(x) = xe^{-x^2}$
4.  $f(x) = \frac{e^x - e^{-x}}{e^x + e^{-x}} = \tanh(x)$
5.  $f(x) = \frac{\ln(x)}{x^2}$
6.  $f(x) = \frac{\arctan x}{x}$
7.  $f(x) = (x + 1)e^{\frac{x}{x-1}}$
8.  $f(x) = \frac{xe^x}{x + 1}$
9.  $f(x) = x - 3 \arctan(x)$
10.  $f(x) = \ln^2(x) - 3 \ln(x) + 2$
11.  $f(x) = \frac{x^2 - 1}{x + 3}$
12.  $f(x) = \frac{x}{x^2 - 3x + 2}$
13.  $f(x) = \frac{x^2 - 9}{(x + 1)^2}$
14.  $f(x) = \frac{x^2 - 1}{(x - 2)^2}$
15.  $f(x) = \frac{x^3 - x^2 - 4x + 4}{x^2 - x}$
16.  $f(x) = \frac{\sqrt{x^2 - 3x + 2}}{x}$
17.  $f(x) = \sqrt{x + 1} - \sqrt{x}$
18.  $f(x) = \sqrt{x^2 - 1} - \sqrt{x^2 + 1}$

19.  $f(x) = x\sqrt{x^2 - 1} - x^2$
20.  $f(x) = \frac{\sqrt{x^2 + x - 1} - x}{x}$
21.  $f(x) = \arcsin(\sin(x))$
22.  $f(x) = 12e^x(x^2 - 4x + 2) - x^4 + 24x$  (\*)
23.  $f(x) = \left| \frac{x-2}{x+1} \right|^{x+1}$  (\*)
24.  $f(x) = x^2 - x\sqrt{x^2 - 1}$
25.  $f(x) = \ln(x^2 - 1) - \frac{x-2}{x-1}$  (\*)
26.  $f(x) = \frac{1}{x} \ln \left( \frac{2x+1}{x+1} \right)$
27.  $f(x) = \frac{x^2 + 1}{x^2 - |x|}$
28.  $f(x) = \frac{1 + \ln|x| - 8x}{5 + 2x^2}$  (\*)
29.  $f(x) = (x^2 + 2x - 1)e^{x+5} - x - 20$  (\*)
30.  $f(x) = 8x^2 - x^3 - 4\ln(1 + 4x^2)$  (\*)
31.  $f(x) = \ln \left( \frac{1+x^2}{1-x^2} \right) - 8x^2 + x^3$  (\*)
32.  $f(x) = (x^2 - 3x + 2)e^{x+2} - x - 15$  (\*)
33.  $f(x) = \left| \frac{x-2}{x-1} \right|^{x-1}$  (\*)

\* = più difficile.