

Corsi di Laurea della Facoltà di Agraria

A.A. 2004/2005

Matematica

Esercizi del 21 ottobre 2004

1) Determinare il dominio delle seguenti funzioni:

$$f_1(x) = \frac{x^3 - 2x - 1}{5x - 2}, \quad f_2(x) = \frac{x^2 - 3x + 2}{x^2 + x + 7}, \quad f_3(x) = \frac{2x^7 - x + 3}{x^2 - 7x + 2},$$

$$f_4(x) = \sqrt{x^2 + 3}, \quad f_5(x) = \sqrt{-2x^2 - 1}, \quad f_6(x) = \sqrt{x^2 - 3x + 1},$$

$$f_7(x) = \sqrt[3]{4 - x^2}, \quad f_8(x) = \sqrt{3 + 2x - x^2}, \quad f_9(x) = \sqrt{\frac{2x - 3}{x - 4}},$$

$$f_{10}(x) = \sqrt{2^{5x} - 4}, \quad f_{11}(x) = 2^{\sqrt{5x-4}}, \quad f_{12}(x) = \frac{1}{e^{2x} - 3},$$

$$f_{13}(x) = \ln(7 - 2x), \quad f_{14}(x) = \ln(x^2 - 5x + 1), \quad f_{15}(x) = \log(1 - \log x),$$

$$f_{16}(x) = \sqrt[4]{5x - 6} + \log(6 - x - x^2), \quad f_{17}(x) = \ln(3 - x - |x - 2|),$$

$$f_{18}(x) = \sqrt{x - |2x + 3|}, \quad f_{19}(x) = \ln(\sqrt{2x + 1} - 3), \quad f_{20}(x) = \sqrt{\sqrt{x + 1} - \sqrt{x}},$$

$$f_{21}(x) = \ln\left(\sqrt{\frac{x-1}{x+1}} - 2\right), \quad f_{22}(x) = \ln(x - 4 - \sqrt{x^2 - 4}), \quad f_{23}(x) = \arcsen(2x - 1),$$

$$f_{24}(x) = \arccos(2 + \sqrt{x}), \quad f_{25}(x) = \arctg(x^2 - 4x + 1), \quad f_{26}(x) = \arccos(2 \operatorname{sen} x).$$

2) Studiare il segno delle seguenti funzioni:

$$g_1(x) = 1 - 4x - 2x^2, \quad g_2(x) = (x - 4)(2x + 1)x, \quad g_3(x) = \frac{x - 5}{3} - \frac{3}{x - 5},$$

$$g_4(x) = |x^2 - 3|(7x - 2), \quad g_5(x) = 3 - \frac{1}{|2x - 3|}, \quad g_6(x) = 1 - |x^2 - 1|,$$

$$g_7(x) = 2x - 1 - |3 + 2x|, \quad g_8(x) = \sqrt[3]{5 - 2x} - 1, \quad g_9(x) = \sqrt{3x + 1} - 2,$$

$$g_{10}(x) = \sqrt{x - 1} - \sqrt{2x - 3}, \quad g_{11}(x) = \sqrt{x^2 - 8x + 15} + 2 - x,$$

$$g_{12}(x) = 3^x - \frac{1}{9}, \quad g_{13}(x) = 3^x + 1, \quad g_{14}(x) = 1 - 2^{3x+2},$$

$$g_{15}(x) = \log_3(2x - 5), \quad g_{16}(x) = \log_{1/2}(4x - 2), \quad g_{17}(x) = \log(x - 1) + \log(2x + 1).$$