Solutions:
MATHEMATICS I
(16.02 2001)

1) $X = -\frac{4}{5}$

2) (a) is the best offer

3) $D_f = [-2, 2]$

zeros: $x_1 = 0$, $x_2 = 2$, $x_3 = -2$

$f(x)$ odd function

stationary points: $P_1(0,0)$, $P_2(\sqrt{3}, \sqrt{3})$, $P_3(-\sqrt{3}, -\sqrt{3})$

P_2: local max. P_3 local min P_1 no extreme point

$R_f = [-\sqrt{3}, \sqrt{3}]$ f^{-1} does not exist

4) $\varepsilon f(2) = 3.76$

$t(p)$ elastic for $p > 0.7595$

5) $P_4 = x^4 - 3x^2 - 4$

$x_0 = 2$ no zero for $f(x)$

limit is 20

6) $I_1 = -\ln|1 - \ln x| + C$

$I_2 = \frac{x^2}{2}(\ln x')^2 - \frac{x^2}{2}\ln x + \frac{x^2}{4} + C$