Cálculo Diferencial e Integral para Oceanografia
Lista 3 - Gabarito.

1. a) $\frac{4}{5}$ b) 1 c) 2 d) 0

e) 0 f) -1 g) -2 h) 0

i) $\cos a$.

2. a) $+\infty$ b) 0 c) $-\infty$ d) 1

e) 1 f) $+\infty$ g) $-\infty$ h) $-\infty$

i) $+\infty$ j) 0 k) $\ln(2)$ l) $\ln(2)$

m) $-\infty$

3. Para $L = -1$

4. a) Descontínua em $x = 2$ b) Não há pontos de descontinuidade.

c) Não há pontos de descontinuidade. d) Descontínua em $x = 0$

Cálculo Diferencial e Integral para Oceanografia

Lista 1 - Gabarito.

1. a) $]-1,0[\, \cup \,]1/2,+\infty[$

b) $]-\infty,-1000] \cup [-999,+\infty[$

c) $[-5/2,-1] \cup [1/2,3]$

d) $]\frac{\pi}{6}+2k\pi, \frac{5\pi}{6}+2k\pi[\, \cup \,]\frac{7\pi}{6}+2k\pi, \frac{11\pi}{6}+2k\pi[$ com $k \in \mathbb{Z}$

e) $]-\sqrt{2}, +\sqrt{2}[$

2. a) Falso   b) Falso   c) Falso

3. a) $x=0;\ y=2$

$x=0;\ y=-2$

$x=\sqrt{3};\ y=1$

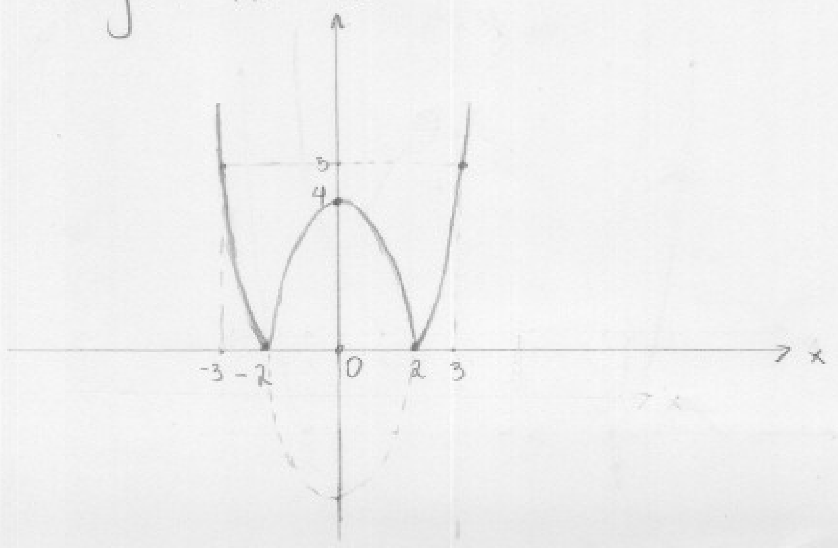
$y=\sqrt{3};\ y=1$

b) $x=-1;\ y=0$

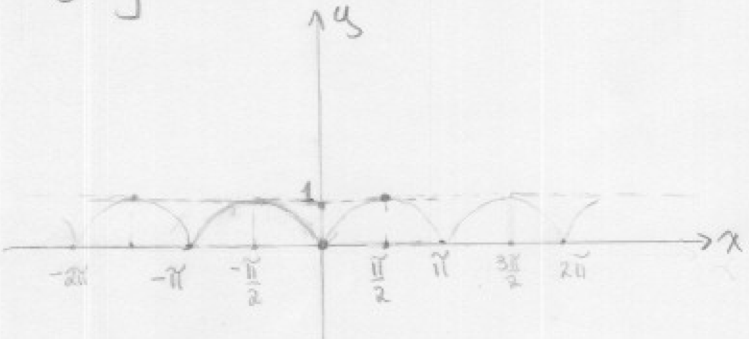
$x=\frac{3}{4};\ y=\frac{\sqrt{7}}{2}$

$x=\frac{3}{4};\ y=-\frac{\sqrt{7}}{2}$

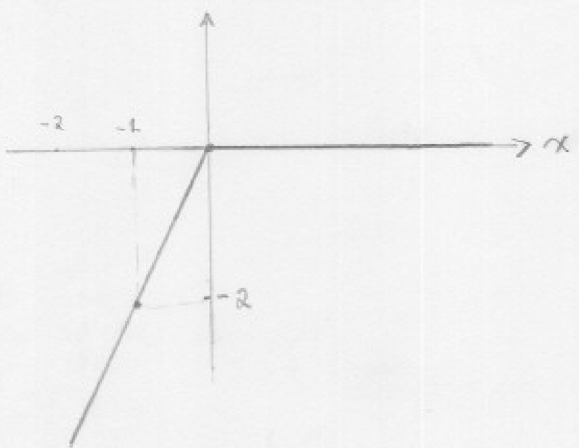
4. a) $f(x)=|x^2-4|$



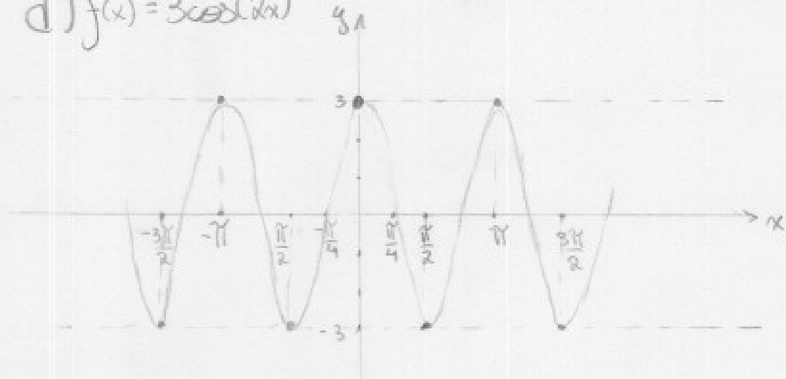
b) $f(x) = |\operatorname{sen} x|$



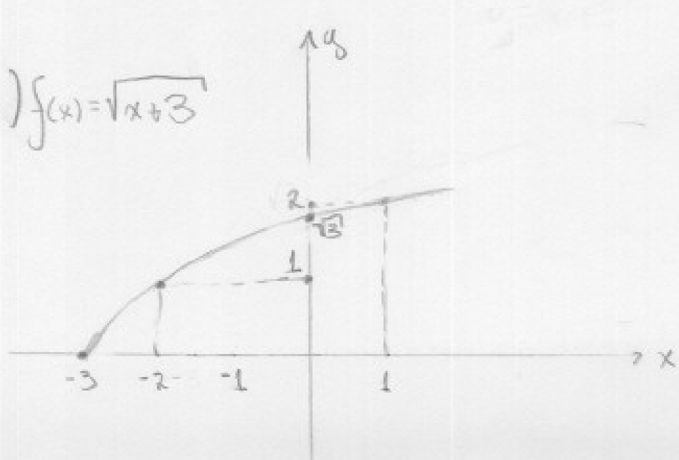
c) $f(x) = x - |x| = \begin{cases} 0, & \text{se } x \geq 0 \\ 2x, & \text{se } x < 0 \end{cases}$



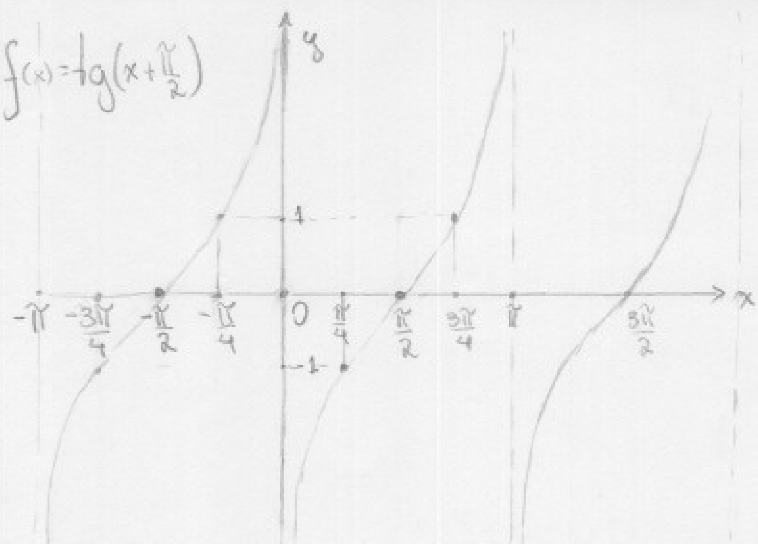
d) $f(x) = 3\cos(2x)$



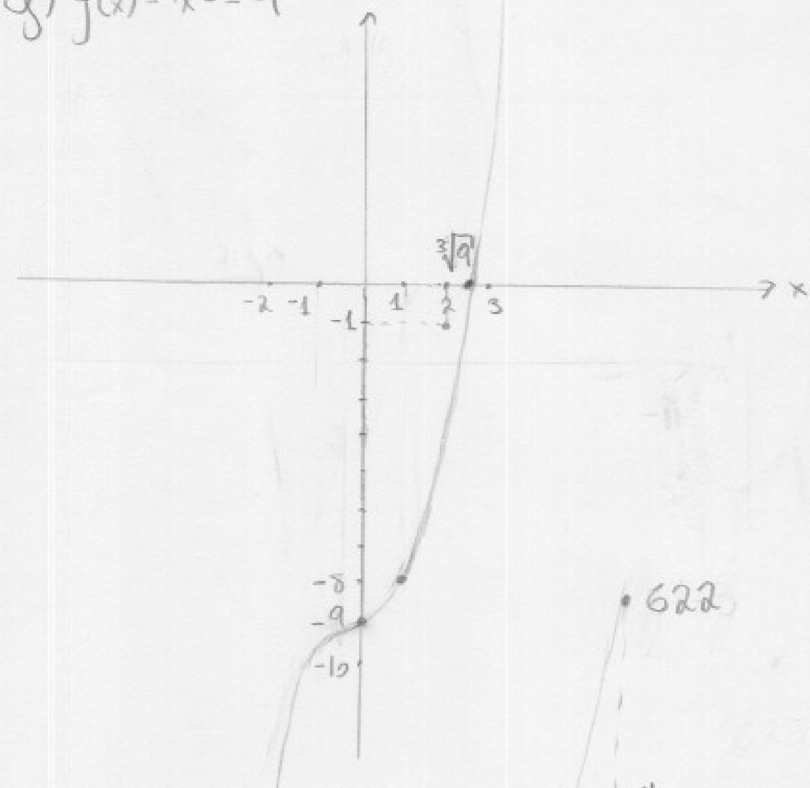
e) $f(x) = \sqrt{x+3}$



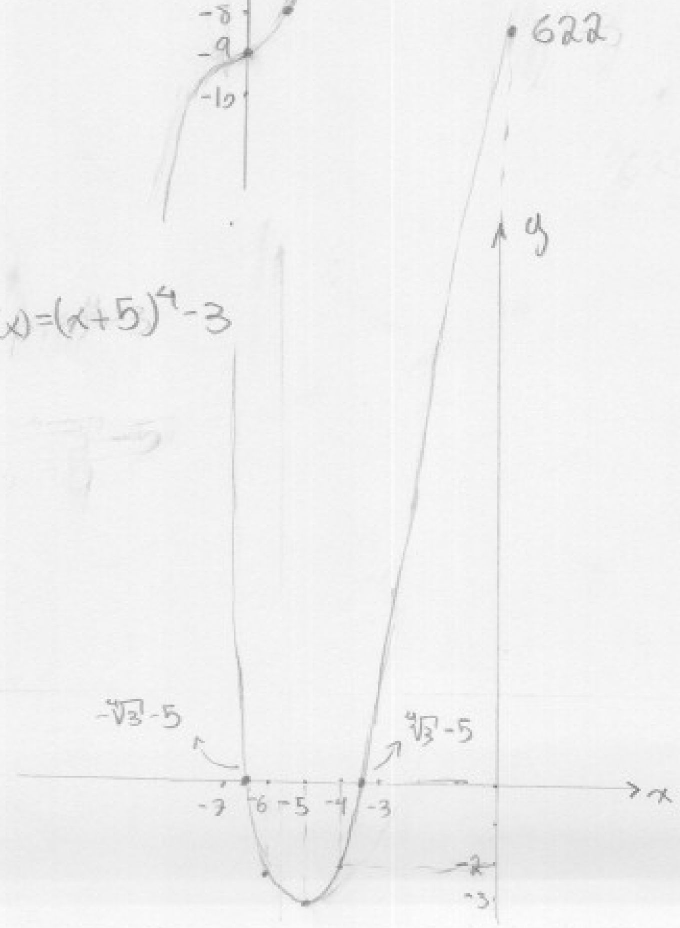
f) $f(x) = tg\left(x + \frac{\pi}{2}\right)$



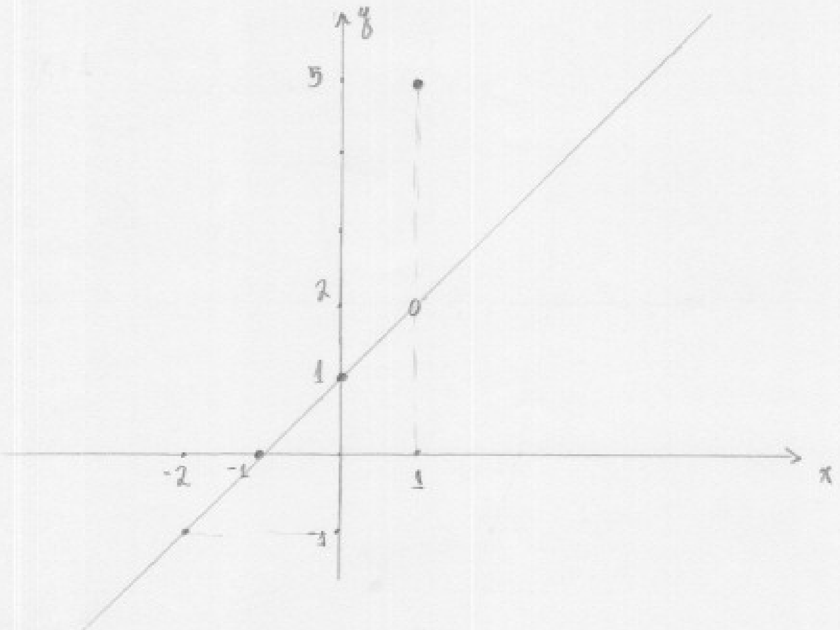
g) $f(x) = x^3 - 9$



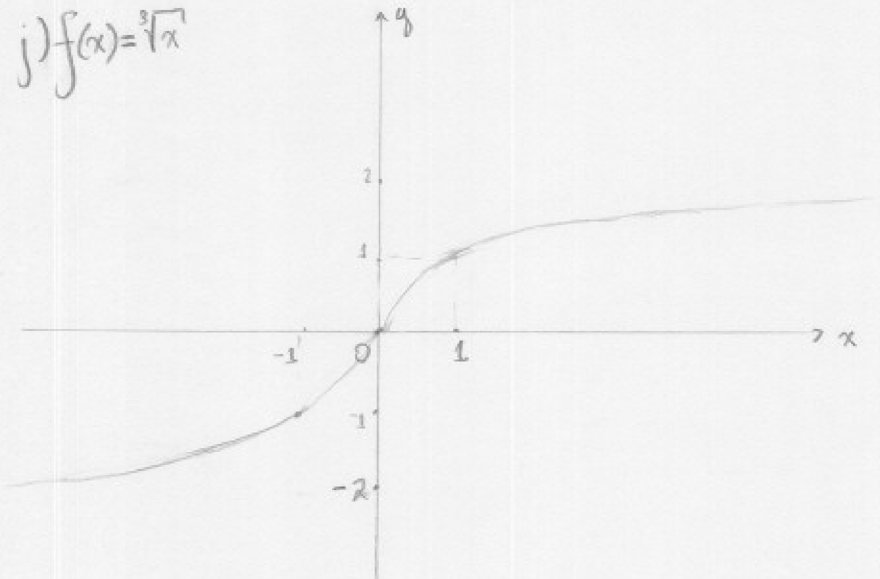
h) $f(x) = (x+5)^4 - 3$



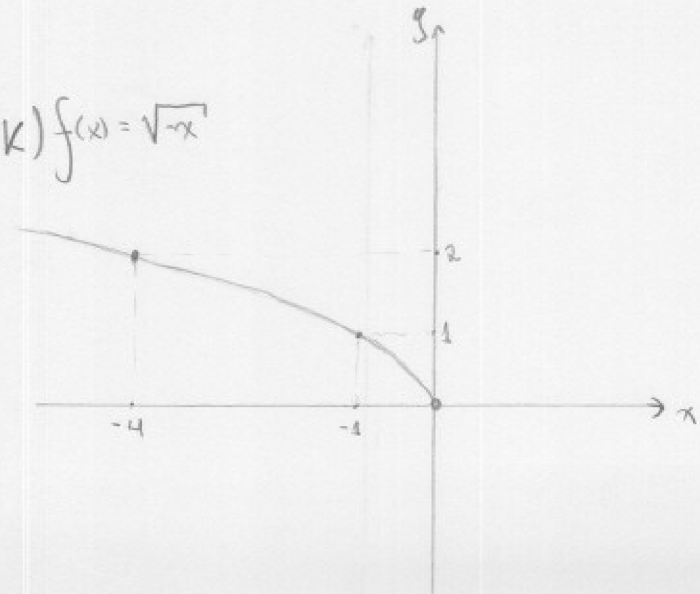
i) $f(x) = \begin{cases} \dfrac{x^2-1}{x-1}, & se\ x \neq 1 \\ 5, & se\ x = 1 \end{cases}$



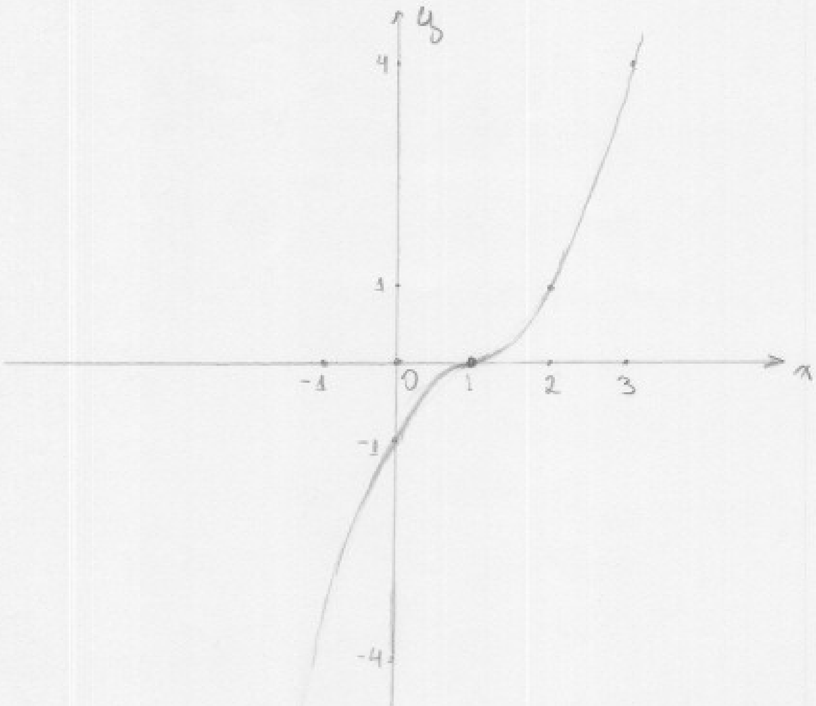
j) $f(x) = \sqrt[3]{x}$



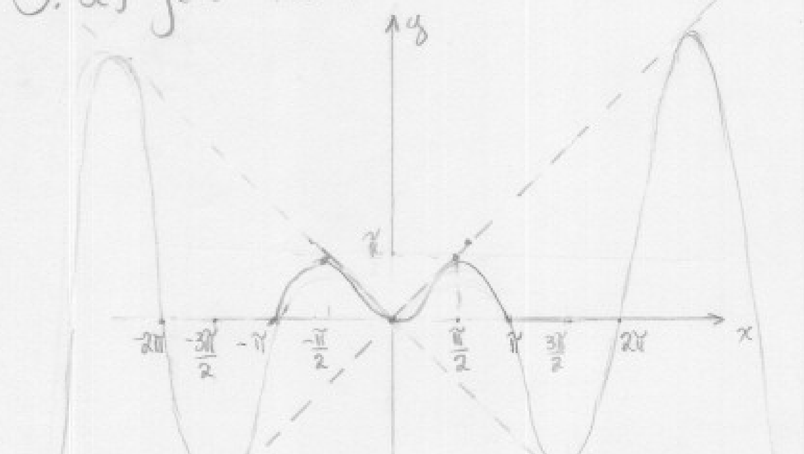
k) $f(x) = \sqrt{-x}$



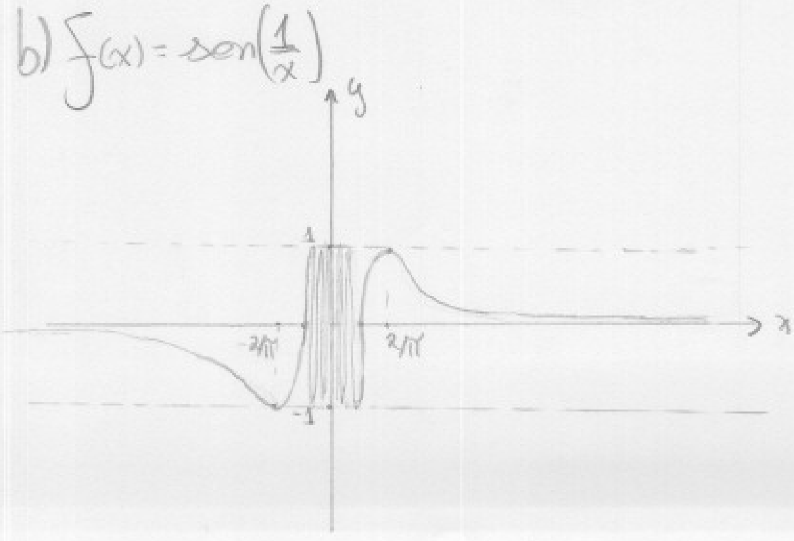
l) $f(x) = \left|\dfrac{(x-1)^3}{x-1}\right|$



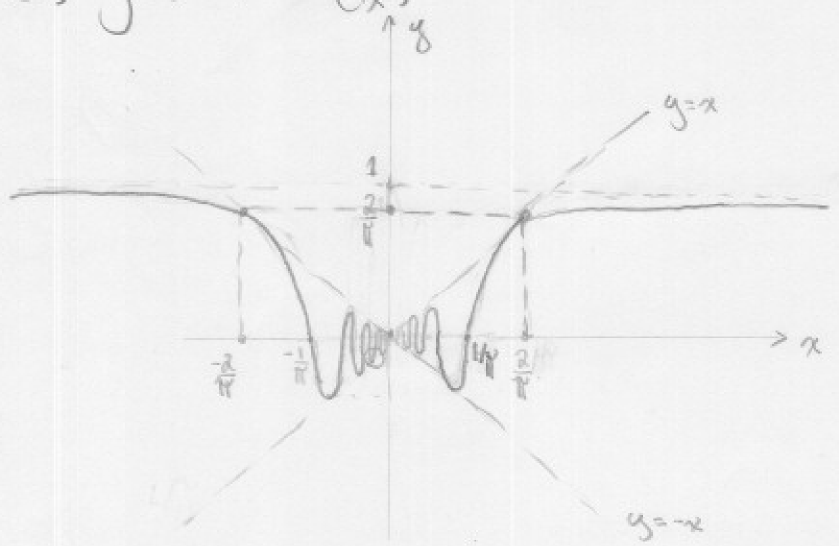
5. a) $f(x) = x \operatorname{sen} x$



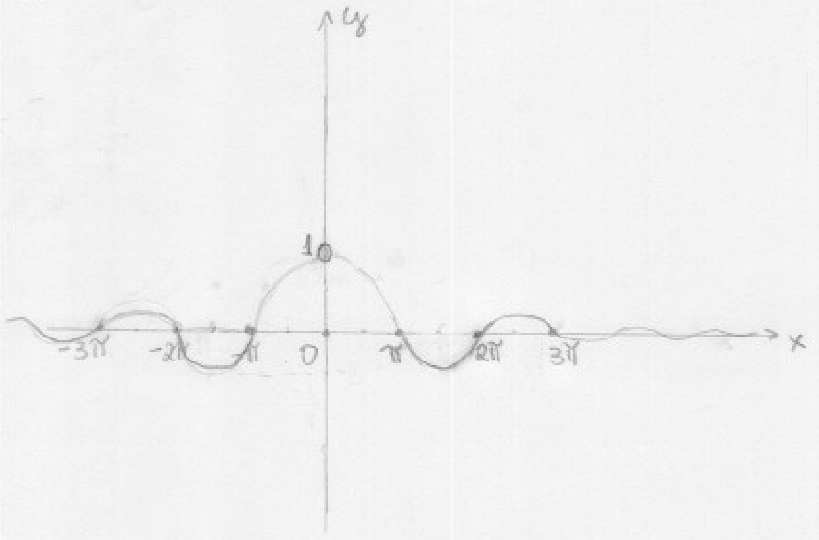
b) $f(x) = \operatorname{sen}\left(\dfrac{1}{x}\right)$



c) $f(x) = x\,\mathrm{sen}\left(\frac{1}{x}\right)$



d) $f(x) = \frac{\mathrm{sen}\,x}{x}$



6\. a) $D_f = \mathbb{R}\setminus\{2\}$; $Im_f = \mathbb{R}\setminus\{0\}$

b) $D_f = \mathbb{R}\setminus\{2\}$; $Im_f =]-\infty, \frac{1}{8}]$

c) $D_f = \mathbb{R}$; $Im_f = [0, +\infty[$

d) $D_f =]-\infty, 1[\cup]3, +\infty[$

$Im_f = (0, +\infty)$

e) $D_f = \mathbb{R}$; $Im_f = (0, 1/3]$

f) $D_f = [0, +\infty)\setminus\{4\}$

$Im_f = \mathbb{R}$

g) $D_f = \mathbb{R}$; $Im_f = [\sqrt[3]{-9}, +\infty)$

h) $D_f = [-3, -2] \cup [2, +\infty)$

$Im_f = [0, +\infty)$

7. a) $D_g = \mathbb{R}$, $Im_f = \mathbb{R} \Rightarrow Im_f = D_g$

$(g \circ f)(x) = 3x+7$

b) $D_g = \mathbb{R} \setminus \{2\}$, $Im_f = [-3, +\infty) \Rightarrow Im_f \subset D_g$

$(g \circ f)(x) = \frac{x^2-2}{x^2-5}$

c) $D_g = [0, +\infty)$, $Im_f = [2, +\infty) \Rightarrow Im_f \subset D_g$

$(g \circ f)(x) = \sqrt{2+x^2}$

d) $D_g = \mathbb{R} \setminus \{2\}$, $Im_f = \mathbb{R} \setminus \{2\} \Rightarrow Im_f = D_g$

$(g \circ f)(x) = \frac{2}{x-1}$

e) $D_g = \mathbb{R} \setminus \{1\}$, $Im_f = \mathbb{R} \setminus \{1\} \Rightarrow Im_f = D_g$

$(g \circ f)(x) = -2x-1$

f) $D_g = \mathbb{R} \setminus \{2\}$, $Im_f = \mathbb{R} \setminus \{2\} \Rightarrow Im_f = D_g$

$(g \circ f)(x) = x$

g) $D_g = [0, +\infty)$, $Im_f = [0, +\infty) \Rightarrow Im_f = D_g$

$(g \circ f)(x) = \sqrt{x^2-x}$