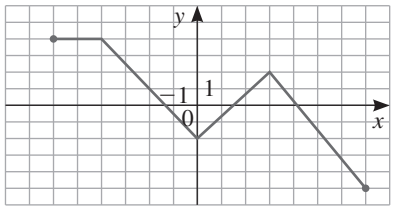
FICHA DE TRABALHO 12 **Funções reais de variável real**

1 **1.1** $h(x) = \begin{cases} 4 & \text{se } x \leqslant -2 \\ \frac{3}{4}x^2 - 6x + 9 & \text{se } x \geqslant 1 \end{cases}$

1.2 **a)** $[-1, 3]$; **b)** $[0, +\infty[$; **c)** -6

1.3 $[1, 8]$

2 **2.1**



2.2 **a)** $D' = [-7, 2[$; tem dois zeros; **b)** $D' = [-10, 3[$; **c)** $D' = [0, 5[$

2.3 $k = -2$

3 **a)** $-3(x - 6)(x + 1)$

b) $(x - 2)(x + 1)(x + 2)$

c) $x(x - 3)(x - 2)(x + 1)$

d) $(x + 2)^2(x^2 + 4x + 10)$

4 **a)** $p = -\frac{25}{2}$; **b)** $p = \frac{1279}{63}$

5 **a)** $\frac{1}{12}(x^2 - 4)(x + 1)(x - 3)$; **b)** $\frac{1}{5}(x + 3)(x - 1)^2(x - 3)$

6 **a)** $]-\infty, -3[\cup]0, 1[$; **b)** $]-\infty, -2] \cup [0, 7]$; **c)** $[-4, -1] \cup [2, 3]$

7 **7.1** Designando por x a aresta lateral do prisma quadrangular, vem:

$400 = 12a + 4x \Leftrightarrow 4x = 400 - 12a \Leftrightarrow x = 100 - 3a$

Logo, o volume do prisma é:

$V(a) = A_{\text{base}} \times \text{altura} \Leftrightarrow V(a) = a^2 \times (100 - 3a) \Leftrightarrow V(a) \Leftrightarrow 100a^2 - 3a^3$ c.q.d.

7.2 $\alpha \approx 33$ m