CM300 - Introdução ao Cálculo
Lista de Exercícios 5

1. Indique as coordenadas do vértice e esboce os gráficos das funções a seguir:

   (a) $f(x) = -2x^2 + 6x - 2$ (b) $g(x) = \dfrac{x^2}{2} - x + 1$

2. Calcule, se possível, as expressões abaixo:

   (a) $25^{-\frac{1}{2}}$ (b) 25^{-2} (c) $(-25)^2$ (d) $(-25)^{-\frac{1}{2}}$ (e) $8^{-\frac{2}{3}}$ (f) $(8^{-1})^{-2}$ (g) $\left(\dfrac{1}{2}\right)^{\frac{1}{3}} \left(\dfrac{1}{2}\right)^{\frac{2}{3}}$

3. Simplifique as expressões abaixo:

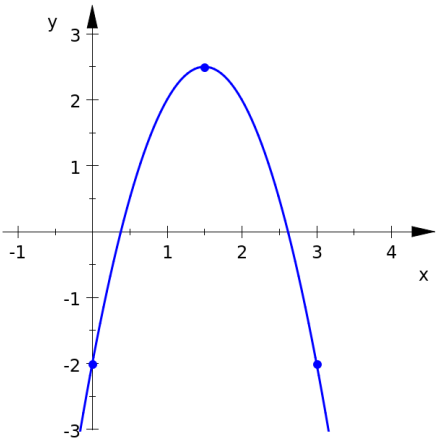
   (a) $\dfrac{x^3y^5}{x^4y^2}$ (b) $\dfrac{x^{-5}y^{-2}}{x^5y^2}$ (c) $\dfrac{2y^0y^2}{y^3y^4}$ (d) $\dfrac{x^{\frac{2}{3}}y^{\frac{1}{3}}}{x^{-\frac{2}{3}}y^3}$

4. Faça, numa mesma figura, os gráficos de $f(x) = x$, $g(x) = x^2$, $h(x) = x^3$ e $k(x) = x^4$.

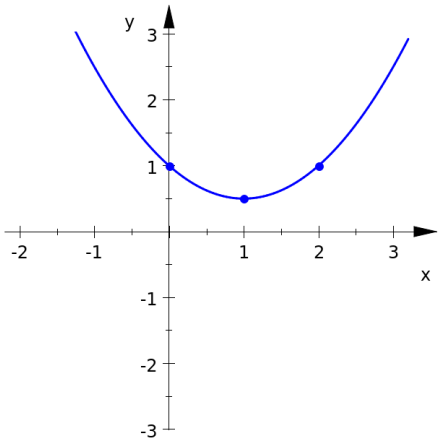
Respostas:

1. Vértices: **(a)** (3/2,5/2), **(b)** (1,1/2)

(a)



(b)



2. (a) $\frac{1}{\sqrt{25}} = \frac{1}{5}$ (b) $\frac{1}{625}$ (c) 625 (d) $\frac{1}{\sqrt{-25}} \notin \mathbb{R}$ (e) $\frac{1}{4}$ (f) 64 (g) $\frac{1}{2}$

3. (a) $\frac{y^3}{x}$ (b) $\frac{1}{x^{10}y^4}$ (c) $\frac{2}{y^5}$ (d) $x^{\frac{4}{3}}y^{-\frac{8}{3}}$

4.