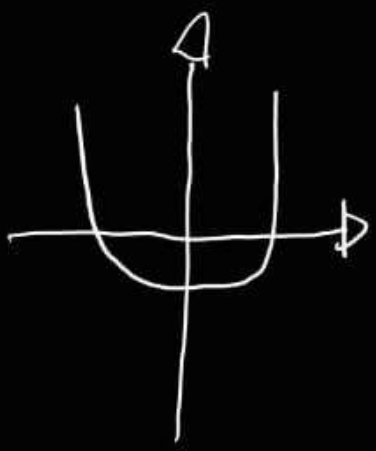
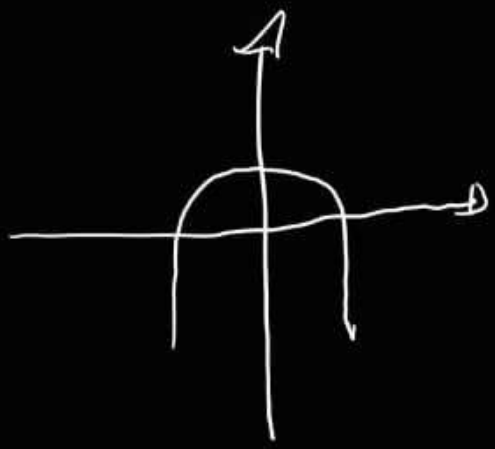
• Exercícios

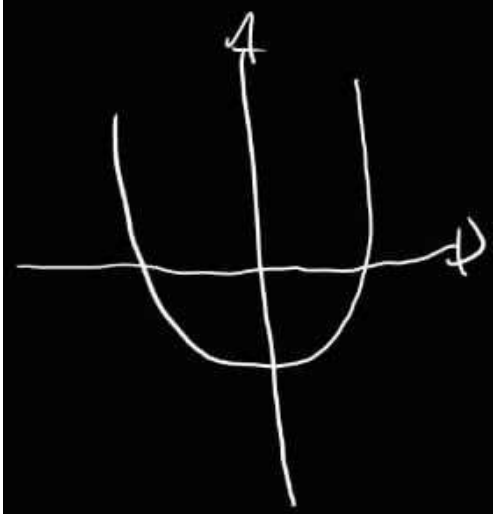
225/a) $y = x^2$



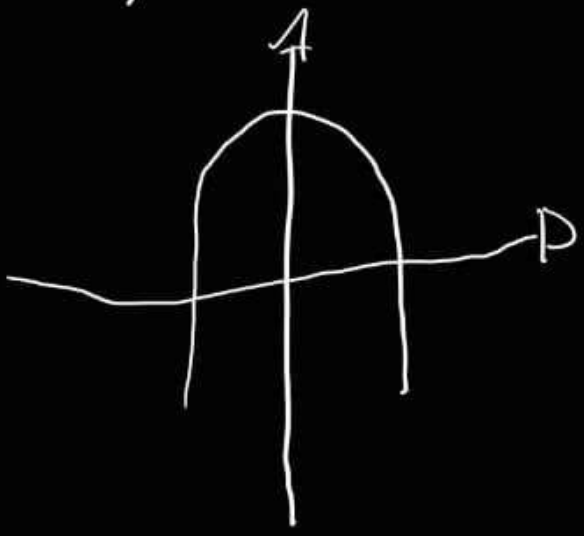
b) $y = -x^2$



c) $y = 2x^2$



d) $y = -2x^2$



226) $m \neq 2$ $m \neq -2$

227) A função que atende a todas as requisitos é: $-2x^2+3x+1$

229)

a) $f(x) = x^2 - 3x + 2$

$a = 1$ $\quad \Delta = b^2 - 4ac$ $\quad x = \frac{-(-3) \pm 1}{2}$

$b = -3$ $\quad \Delta = 9 - 8$

$c = 2$ $\quad \Delta = 1$ $\quad x_1 = 2$ $x_2 = 1$

b) $f(x) = -x^2 + 7x - 12$

$a = -1$ $\quad \Delta = b^2 - 4ac$ $\quad x = \frac{-(7) \pm 1}{-2}$

$b = 7$ $\quad \Delta = 49 - 48$

$c = -12$ $\quad \Delta = 1$

$x_1 = 3$ $x_2 = 4$

c) $f(x) = 3x^2 - 7x + 2$

$a = 3$

$b = -7$ $\Delta = b^2 - 4ac$ $\frac{-(-7) \pm 5}{6}$

$c = 2$ $\Delta = 49 - 24$

$\Delta = 25$ $x_1 = \frac{2}{1}$ $x_2 = \frac{2}{6}$

d) $f(x) = x^2 - 2x + 2$

$a = 1$ $\Delta = b^2 - 4.a.c$ $\therefore \Delta \notin \mathbb{R}$

$b = -2$ $\Delta = 4 - 8 = -4$

$c = +2$

25) $\frac{1}{x} + \frac{1}{y} = \frac{7}{12} \Rightarrow x = \frac{12 - 12}{7 - 7} = \frac{0}{0}$

$x \cdot y = 12$

$x \neq 0$

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$b(x) = x^4 - 5x^2 + 2$

$h = x^2$

$h^2 - 5h + 2$

$a = 1$
$b = -5$
$c = 2$

$h = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$H = \frac{-(-5) \pm \cong 4,12}{2}$

$x_1 \cong 4,56$

$x_2 \cong 0,44$

$x = \pm \sqrt{4,56}$

$x = \pm \sqrt{0,44}$

b) $b(x) = -x^4 + 5x^2 + 36$

$h = -x^2$ $\quad -H^2 + 5h + 36$

$a = -1$
$b = -5$
$c = 36$

$\Delta = b^2 - 4ac$

$\Delta = 25 + 144$

$\Delta = 229$

$\frac{-(-5) \pm 10,90}{-2}$

$H_1 \cong -7,95$

$H_2 \cong 3,98$

$x' = \sqrt{-7,95}$ $\quad x'' = \sqrt{3,98}$

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236 | $f(x) = (m-7)x^2 + (2m+3)x + m$

$a = m - 7$

$b = 2m + 3$

$c = m$

$m \neq 7$

$\Delta > 0$

$\Delta = (2m+3)^2 - 4 \cdot (m-7) \cdot (m)$

$\Delta = (2m+3)^2 - 4(m^2 - 7m)$

$\Delta = 4m^2 + 12m + 9 - 4m^2 + 28m$

$\Delta = 16m + 9$

$16m + 9 > 0$

$16m > -9$

$m > -\frac{9}{16}$

$m > -\frac{9}{16}$ e $m \neq 7$

237)

$(m+2)x^2+(3-2m)x+(m-7)=0$

$a = m+2$

$b = 3-2m$

$c = m-7$

$\Delta = (3-2m)^2 - 4 \cdot (m+2)(m-7)$

$\Delta = (3-2m)(3-2m)$

$\Delta = 9-6m-6m+4m$

$\Delta = 9-4m-4+2m-m+2m-2$

$\Delta = 9-4(4m-2)$

$\Delta = -16m+9-9$ $\quad \Delta > 0$

$\Delta = -16m+1$

$S = \{ \Delta \in \mathbb{R} \}$

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294| $2x^2 - 5x - 1 = 0$ $a = 2$

a| $x_1 + x_2$ $\Delta = b^2 - 4ac$ $b = -5$

$\Delta = 25 + 8$ $c = -1$

$\frac{-(-5) \pm 5.74}{4}$ $\Delta = 33$

$x' = 5.37$

$x'' = 0.74$

a) $\cong 6.11$

b| $x_1 \cdot x_2) \cong 3.97$

c) $\frac{0.74 + 5.37}{3.97} \cong 1.53$

d) $(x_1)^2 + (x_2)^2 \cong 27.85 + 0.54 = 29.39$

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275/a) $y = x^2 - 3x$

$a = 1$ $\quad \Delta = 9 - 0 \quad \Delta = 9$

$b = -3$

$c = 0$ $\quad \frac{9}{4} = 2.25$

$Im(b) = \{y \in \mathbb{R} \geq 2.25\}$

b) $y = -x^2 + 9$

$a = -1$ $\quad \Delta = b^2 - 4ac$ $\quad \frac{16}{-4} = -4$

$b = 9$ $\quad \Delta = 16$

$c = 0$

$Im(b) = \{y \in \mathbb{R} \leq -4\}$