30/04/24

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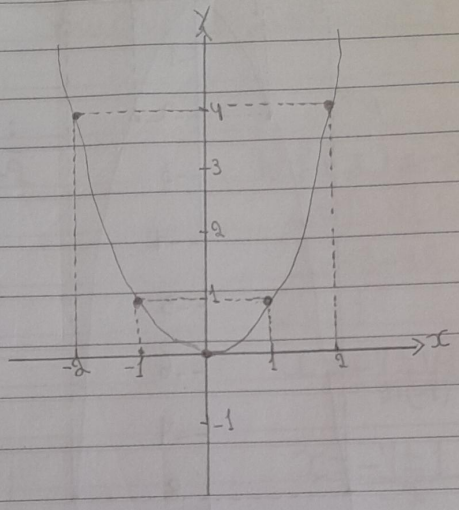
Exercícios propostos:

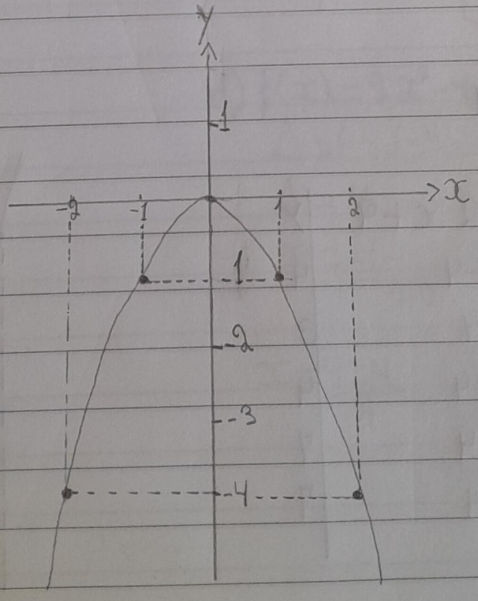
1.a) $y = x^2$

| x | y |
|---|---|
| -1 | 1 |
| 0 | 0 |
| 1 | 1 |
| -2 | 4 |
| 2 | 4 |



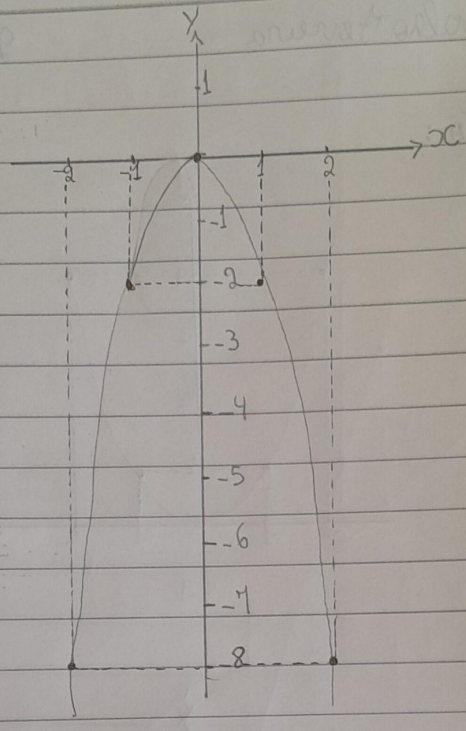

b) $y = -x^2$

| x | y |
|---|---|
| -2 | -4 |
| -1 | -1 |
| 0 | 0 |
| 1 | -1 |
| 2 | -4 |



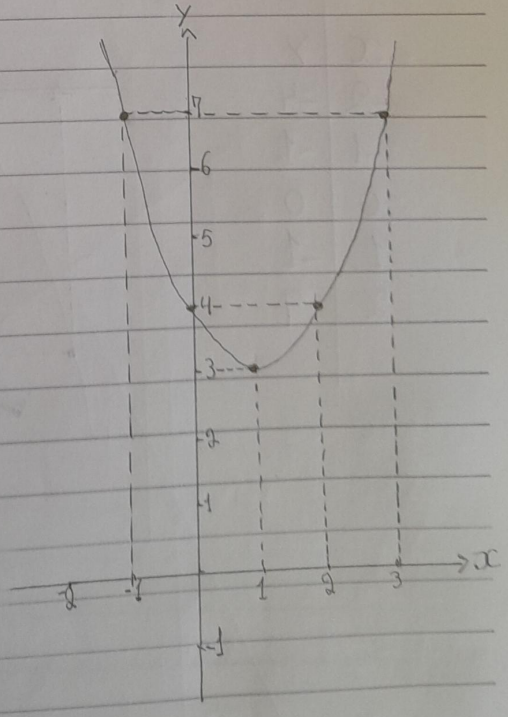
c) $Y = -2x^2$

| x | y |
|---|---|
| -2 | -8 |
| -1 | -2 |
| 0 | 0 |
| 1 | -2 |
| 2 | -8 |




d) $Y = x^2 - 2x + 4$

| x | $y = x^2 - 2x + 4$ | y |
|---|---|---|
| 2 | $y = 4 - 4 + 4$ | 4 |
| 1 | $y = 1 - 2 + 4$ | 3 |
| 0 | $y = 0 - 0 + 4$ | 4 |
| 3 | $y = 9 - 6 + 4$ | 7 |
| -1 | $y = 1 + 2 + 4$ | 7 |



Exercício Resolvido:

2. $f(x) = mx^2 + (2m-1)x + (m-2)$

$\Delta > 0 \rightarrow (2m-1)^2 - 4(m)(m-2) > 0 \rightarrow 4m^2 - 4m + 1 - 4m^2 + 8m > 0 \rightarrow$

$4m > -1 \rightarrow m > -\frac{1}{4}$ Solução: $\{m \in \mathbb{R} \mid m > -\frac{1}{4}\}$

Exercícios Propostos:

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

$\Delta = (-3)^2 - 4.1.2$

$\Delta = 9 - 8$

$\Delta = 1$

$x = \frac{-(-3) \pm \sqrt{1}}{2.1}$

$x = \frac{3 \pm 1}{2}$ $\boxed{x_1 = 2 \quad x_2 = 1}$

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

$\Delta = 7^2 - 4(-1)(-12)$

$\Delta = 49 - 48$

$\Delta = 1$

$x = \frac{-7 \pm \sqrt{1}}{2.(-1)}$

$x = \frac{-7 \pm 1}{-2}$ $\boxed{x_1 = 3 \quad x_2 = 4}$

c) $f(x) = -5x^2$

$-5x^2 = 0$

$x^2 = \frac{0}{-5}$

$x^2 = 0$

$x = 0$ $\boxed{x_1 = x_2 = 0}$

d) $f(x) = 2x^2 - 4x$

$\Delta = (-4)^2 - 4.2.0$

$\Delta = 16$

$x = \frac{-(-4) \pm \sqrt{16}}{2.2}$

$x = \frac{4 \pm 4}{4}$ $\boxed{x_1 = 2 \quad x_2 = 0}$

e) $f(x) = x^4 - 5x^2 + 4$

$y = x^2$

$y^2 - 5y + 4$

$\Delta = (-5)^2 - 4.1.4$

$\Delta = 25 - 16$

$\Delta = 9$

$y = \frac{-(-5) \pm \sqrt{9}}{2.1} \rightarrow y = \frac{5 \pm 3}{2}$ $y_1 = 4$, $y_2 = 1$

$x = \pm\sqrt{y}$

$\boxed{x_1 = 2 \quad x_2 = -2 \quad x_3 = 1 \quad x_4 = -1}$

2. $x^2+(3m+2)x+(m^2+m+2)=0$

$\Delta=0 \rightarrow (3m+2)^2-4.1(m^2+m+2)=0 \rightarrow 9m^2+12m+4-4m^2-4m-$

$8=0 \rightarrow 5m^2+8m-4=0$

$\Delta=8^2-4.5(-4)$

$\Delta=64+80$

$\Delta=144$

$m=\frac{-8\pm\sqrt{144}}{2.5}$

$m=\frac{-8+12}{10}$

$m_1=\frac{2}{5}$

$m_2=-2$