① a) $(1,0) \rightarrow y = x^2 - x$ $(2,2) \rightarrow y = x^2 - x$ $(3,6) \rightarrow y = x^2 - x$

$0 = 1^2 - 1$ $2 = 2^2 - 2$ $6 = 3^2 - 3$ $R = \{(1,0), (2,2), (3,6)\}$

$0 = 1 - 1$ $2 = 4 - 2$ $6 = 9 - 3$

$0 = 0$ $2 = 2$ $6 = 6$

b) D= são os elementos(x) do conjunto A

Im = são os elementos (y) do conjunto B.

c) Sim, pois todos os elementos (x) do conjunto A pertence aos pares ordenados e não se repete.

② a) $f(2) = 3.2 - 2$

$= 6 - 2$

$f(2) = 4$

b) $g(4) = 2.4 + 5$

$g(4) = 8 + 5$

$g(4) = 13$

c) $f(0) = 3.0 - 2$

$f(0) = 0 - 2$

$f(0) = -2$

$g(-1) = 2.(-1) + 5$

$g(-1) = -2 + 5$

$g(-1) = 3$

$f(0) + g(-1)$

$-2 + 3 = 1$

d) $f(13) = 3 \times 13 - 2$

$f(13) = 39 - 2$

$f(13) = 37$

e) $f(x) = 3.(2x + 5) - 2$

$= 6x + 15 - 2$

$6x = -13$

$x = \frac{-13}{6}$

③ a) $f(x) = \frac{2x^2 - 3x}{4x + 12}$

$4x + 12 \neq 0$

$4x \neq -12$

$x \neq \frac{-12}{4}$

$x \neq -3$

$D = \{x \in R \mid x \neq -3\}$

b) $y = \frac{x^3 - 2x^2 + 56}{x^2 - 4x + 3}$

$x^2 - 4x + 3$

$\Delta = b^2 - 4ac$

$\Delta = (-4)^2 - 4.1.3$

$\Delta = 16 - 12$

$\Delta = 4$

$x = \frac{-b \pm \sqrt{\Delta}}{2a} \rightarrow \frac{4 \pm 2}{2}$ $x' = \frac{4+2}{2} = 3$ $x'' = \frac{4-2}{2} = 1$

$D = x \in R \mid \{1, 3\}$

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c) $g(x) = \sqrt[3]{2x+5}$

$D = \mathbb{R}$

d) $f(x) = \sqrt{6-2x}$

$6 - 2x \geq 0$

$-2x \geq -6 \cdot (-1)$

$2x \leq 6$

$x \leq 3$

$D = \{x \in \mathbb{R} \mid x \leq 3\}$

e) $y = \dfrac{2x^2 - 3x + 9}{\sqrt[4]{3x+6}}$

$3x + 6 \geq 0$

$3x \geq -6$

$x \geq -2$

$D = \{x \in \mathbb{R} \mid x \geq -2\}$

④ a) $L(80) = 5.80 - 200$

$L(80) = 400 - 200$

$L(80) = 200{,}00$ reais

b) $240 = 5x - 200$

$240 + 200 = 5x$

$440 = 5x$

$x = \dfrac{440}{5}$

$x = 88$ unidades

c) $0 = 5x - 200$

$0 + 200 = 5x$

$x = \dfrac{200}{5}$

$x = 40$ unidades

⑤ $f(-3) = 3 \cdot (-3) + 5$

$f(-3) = -9 + 5$

$f(-3) = -4$

$f(0) = 3 \cdot 0 + 5$

$f(0) = 5$

$\dfrac{f(-3) + f(0)}{4} \rightarrow \dfrac{-4 + 5}{4} = \dfrac{1}{4}$