2.67 b

(1) $x \neq \pm 1$

(2) $\lim_{x \to 1^+} \frac{x^2}{x-1} = \frac{1}{+0} = \infty$, $\lim_{x \to 1^-} \frac{x^2}{x-1} = \frac{1}{-0} = -\infty$ $\Big\}$ $x = 1$

$\lim_{x \to -1^+} \frac{x^2}{-x-1} = \frac{1}{-0} = -\infty$, $\lim_{x \to -1^-} \frac{x^2}{-x-1} = \frac{1}{+0} = \infty$ $\Big\}$ $x = -1$

$m = \lim_{x \to \infty} \frac{x^2}{x(x-1)} = 1$

$n = \lim_{x \to \infty} \left(\frac{x^2}{x-1} - x\right) = \lim_{x \to \infty} \left(\frac{x^2 - x^2 + x}{x-1}\right) = 1$ $\Big\}$ $y = x + 1$

$m = \lim_{x \to -\infty} \frac{x^2}{x(-x-1)} = -1$

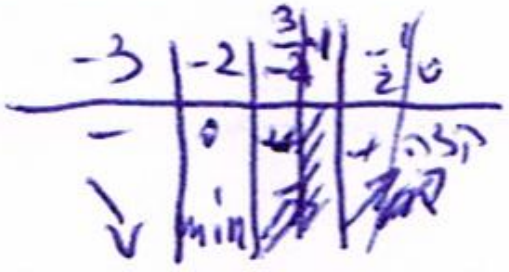
$n = \lim_{x \to -\infty} \left(\frac{x^2}{-x-1} + x\right) = \lim_{x \to -\infty} \left(\frac{x^2 - x^2 - x}{-x-1}\right) = 1$ $\Big\}$ $y = -x + 1$

(3) $x \geq 0 \quad f = \frac{x^2}{x-1}$

$f' = \frac{2x(x-1) - x^2}{(x-1)^2} = \frac{x^2 - 2x}{(x-1)^2} \rightarrow \begin{matrix} x = 0 \\ x = 2 \end{matrix}$

$x < 0 \quad f = \frac{x^2}{-x-1}$

$f' = \frac{2x(-x-1) + x^2}{(-x-1)^2} = \frac{-x^2 - 2x}{(-x-1)^2} \rightarrow \begin{matrix} x = 0 \\ x = -2 \end{matrix}$



$1 < x < 2$, $0 < x < 1$: rosnąca $\quad -2 < x < -1$, $-1 < x < 0$, $2 < x$: malejąca

, $x < -2$

$\max(0,0) \quad \min(-2,4) \quad \min(2,4)$