

4.15
6

① $-4, 5 + x \cdot 5$

② $(0, \frac{1}{5}) \quad (-2, 0)$

③ $\lim_{x \rightarrow \pm\infty} \frac{x^2 + 4x + 4}{x(x^2 + 9x + 20)} = 0$

$u = \lim_{x \rightarrow \pm\infty} \frac{x^2 + 4x + 4}{x^2 + 9x + 20} = 1$

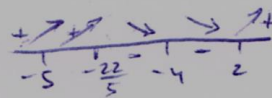
$y = 1, \begin{cases} x = 4 \\ x = -5 \end{cases}$

③ $y' = \frac{(2x+4)(x^2+9x+20) - (2x+9)(x^2+4x+4)}{(x^2+9x+20)^2} =$

$\stackrel{\text{L'Hôpital}}{=} 0 = \frac{2x^3 + 18x^2 + 40x + 4x^2 + 36x + 80 - 2x^3 - 4x^2 - 8x - 36x - 8x}{(x^2+9x+20)^2}$

$5x^2 + 32x + 44 = 0$

$x = -\frac{22}{5}, x = 2$



$x > -2, \quad -5 < x < -\frac{22}{5} \quad x < -5 \quad \text{! ? !}$

$-\frac{22}{5} < x < -4 \quad -4 < x < 2 \quad \text{! ? !}$

$\max(-\frac{22}{5}, -24) \quad \min(-2, 0)$

