

$$y = \frac{x^2 + 4x + 19}{x^2 - 6x + 9}$$

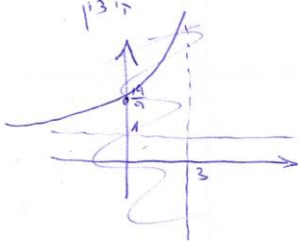
I  $x \neq 3$     II  $(0, \frac{19}{9})$

III  $\lim_{x \rightarrow 3^+} \frac{40}{+0} = \infty \rightarrow \boxed{x=3}$

m =  $\lim_{x \rightarrow \pm\infty} \frac{x^2 + 4x + 19}{x(x^2 - 6x + 9)} = 0$ , n =  $\lim_{x \rightarrow \pm\infty} \frac{x^2 + 4x + 19}{x^2 - 6x + 9} = 1 \rightarrow \boxed{y=1}$

IV-V  $y' = \frac{(2x+4)(x^2-6x+9) - (2x-6)(x^2+4x+19)}{(x^2-6x+9)^2} = \frac{-20x^2 - 20x + 150}{(x-3)^4}$

0 =  $\frac{-10x^2 - 20x + 150}{(x-3)^4} \rightarrow x = -5$



$x > 3, x < -5$  :  $\nearrow \searrow$      $-5 < x < 3$  :  $\searrow \nearrow$   
 $\min(-5, \frac{2}{3}) = (-5, \frac{2}{3})$

