

2.47  
1

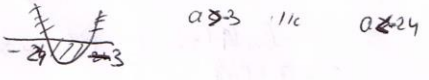
(1)  $y' = \frac{(2x-2)(x^2+5x+4) - (2x+5)(x^2-2x+a)}{(x^2+5x+4)^2} = 0$

$2x^3 + 10x^2 + 8x - 2x^3 - 10x^2 - 8 - 2x^3 + 4x^2 - 2xa - 5x^2 + 10x - 5a = 0$   
 $7x^2 + x(8-2a) - 8-5a = 0$

(-δ + 1) ...  $\Delta = b^2 - 4ac$

$0 < \Delta = 64 - 32a - 28(-8-5a) = 64 - 32a + 224 + 140a + 5a^2$

$0 < 5a^2 + 108a + 288 / 4$   
 $0 < a^2 + 27a + 72$



(2)

$-24 < a < -3$      $\Delta \leq 0$      $0(33)$

(3)  $\int x^2 - 4, -1$

$\lim_{x \rightarrow -4^+} \frac{25}{-0} = -\infty$      $\lim_{x \rightarrow -4^-} \frac{25}{+0} = \infty$      $\lim_{x \rightarrow -1^-} \frac{4}{-0} = -\infty$      $\lim_{x \rightarrow -1^+} \frac{4}{+0} = \infty$

$m = \lim_{x \rightarrow \infty} \frac{(x-1)^2}{x(x^2+5x+4)} = 0$      $n = \lim_{x \rightarrow \infty} \frac{(x-1)^2}{x^2+5x+4} = 1 \rightarrow y = 1$

$f' = \frac{7x^2 + 6x - 13}{(x^2+5x+4)^2} = 0$      $x = -\frac{13}{7}$      $x = 1$

max  $(-\frac{13}{7}, \frac{40}{9})$      $x > 1, -4 < x < -\frac{13}{7}, x < -4$      $-\frac{13}{7} < x < -1, -1 < x < 1$

min  $(1, 0)$

-5	-1	3	13/7	-1	1	0	1	2
+	+	0	-	-	0	-	+	+

$f(0) = \frac{1}{4} \rightarrow (0, \frac{1}{4})$

$0 = \frac{(x-1)^2}{x^2+5x+4} \rightarrow (1, 0)$

