Math 19 Quiz 3 Practice

For the function $f(x) = \dfrac{x-1}{x^2+5x+6}$

1. Find the partition numbers for f

① $f(x) = 0$

$\Rightarrow x - 1 = 0$

$\Rightarrow \boxed{x = 1}$

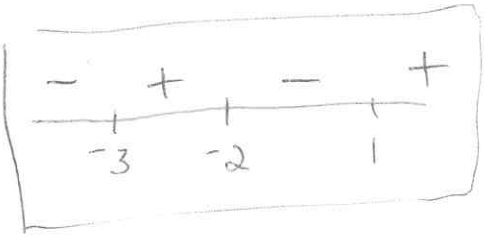
② f is discontinuous at x.

$\Rightarrow x^2 + 5x + 6 = 0$

$\Rightarrow (x+2)(x+3) = 0$

$\Rightarrow \boxed{x = -2,\ x = -3}$

2. Make a sign chart for f



$(-\infty, -3)$: Test $x = -4$, $f(-4) = -2.5 < 0$

$(-3, -2)$: Test $x = -2.5$, $f(-2.5) = 14 > 0$

$(-2, 1)$: Test $x = 0$, $f(0) = -\frac{1}{6} < 0$

$(1, \infty)$: Test $x = 2$, $f(2) = \frac{1}{20} > 0$

3. Solve the inequality $\dfrac{x-1}{x^2+5x+6} < 0$.

$(-\infty, -3) \cup (-2, 1)$

4. Find the average rate of change of f from $x = 2$ to $x = 3$.

$$AROC = \frac{f(3) - f(2)}{3 - 2} = f(3) - f(2)$$

$$= 0.067 - 0.05$$

$$= \boxed{0.017}$$