

$$5. f(x) = \frac{x+4}{x-1}$$

④ VA: $x-1=0$

VA $x=1$

① DOMAIN
 $x-1=0$
 $x \neq 1$

⑤ HA $y = \frac{1}{1}$

② x -INT
 $0 = \frac{x+4}{x-1}$

HA $y=1$

$0 = x+4$

⑥ SA NONE

$-4 = x$

⑦ INC/DEC

③ y -INT
 $y = \frac{0+4}{0-1}$

$f(x) = \frac{x+4}{x-1}$ $\begin{matrix} \text{P} \\ \text{Q} \end{matrix}$ $\begin{matrix} P'=1 \\ Q'=1 \end{matrix}$

$y = -4$

$$\frac{P'Q - PQ'}{Q^2}$$

$$f'(x) = \frac{1(x-1) - (x+4)(1)}{(x-1)^2}$$

$$= \frac{x-1-x-4}{(x-1)^2}$$

$$= \frac{-5}{(x-1)^2}$$

$$(x-1)^2 = 0$$

$$x-1=0$$

$$x=1$$

$x=0$	$x=2$
DEC	DEC

DEC $(-\infty, 1)$
DEC $(1, \infty)$

⑧ EXTREMA

NONE

⑨ CONCAVITY

$$f'(x) = \frac{-5}{(x-1)^2}$$

$$= -5(x-1)^{-2}$$

$$f''(x) = -5(-2)(x-1)^{-3} \cdot 1$$

$$= 10(x-1)^{-3}$$

$$= \frac{10}{(x-1)^3}$$

$$(x-1)^3 = 0$$

$$x-1=0$$

$$x=1$$

$x=0$	$x=2$
NEG	POS

CONC DOWN $(-\infty, 1)$
CONC UP $(1, \infty)$

⑩ POI

NONE

