warmup

Determine the asymptotes for the graph of $f(x) = \frac{x}{x-1}$

HA: $y = 1$

$x - 1 = 0 \rightarrow$ VA: $x = 1$

Ex $f(x) = \frac{4x^2 + 6x - 37}{x + 4}$

VA: $x = -4$

HA: None

Slant asymptote

Ex $f(x) = \frac{3x^2 - 2x + 2}{x - 1}$

VA: $x = 1$

HA: None

$$x - 1 \overline{)\, 3x^2 - 2x + 2}$$

$3x + 1 + \frac{3}{x-1}$

$-(3x^2 - 3x)$

$1x + 2$

$-(1x - 1)$

3

SA: $y = 3x + 1$

Holes

when a numerator & denominator share a common factor.

Ex $f(x) = \frac{(x+2)(x+3)}{x^2(x+2)} = \frac{x+3}{x^2}$

Hole @ $x = -2$

VA: $x = 0$

HA: $y = 0$