

Math 27, HW #12 Selected Problems

Pg. 148, #18¹⁹ $f(x) = \frac{2x^2}{x^2 + x - 6}$

VA: $x^2 + x - 6 = 0 \Rightarrow (x+3)(x-2) = 0 \Rightarrow \boxed{x = -3}, \boxed{x = 2}$

HA: $n = 2$ and $m = 2$ ($m = n$) $y = a_n/b_m = 2/1 = 2$ $\boxed{y = 2}$

Pg. 148, #22 $f(x) = \frac{x^2 + 2x + 1}{2x^2 - x - 3} = \frac{(x+1)(x+1)}{(2x-3)(x+1)} = \frac{x+1}{2x-3}$

VA: $2x^2 - x - 3 = 0 \Rightarrow (2x+3)(x-1) = 0 \Rightarrow \boxed{x = -3/2}$ Hole at $x = -1$

HA: $n = 2, m = 2$ ($n = m$) $\boxed{y = 1/2}$

Pg. 148, #26 $f(x) = \frac{3x^2 + 1}{-x^2 + x + 9}$

Solve: $x^2 + x + 9 = 0$ QF: $x = \frac{-1 \pm \sqrt{1 - 4 \cdot 9}}{2} = \frac{-1 \pm \sqrt{-35}}{2}$ No real solution.

a) Domain of f : All real numbers (\mathbb{R})

b) Continuous

c) VA: none

HA: $n = 2, m = 2$ ($n = m$) $\boxed{y = 3}$

Pg. 148, #32 $f(x) = \frac{x^2 - 4}{x^2 - 3x + 2} = \frac{(x+2)(x-2)}{(x-1)(x-2)}$, $g(x) = \frac{x+2}{x-1}$

c)	x	-3	-2	-1	0	1	2	3
	$f(x)$	$\frac{1}{4}$	0	$-\frac{1}{2}$	-2	-	-	$\frac{5}{2}$
	$g(x)$	$\frac{1}{4}$	0	$-\frac{1}{2}$	-2	-	4	$\frac{5}{2}$

a) Domain of f : \mathbb{R} except $x=1$ and $x=2$

Domain of g : \mathbb{R} except $x=1$

b) VA for f at $x=1$ Hole at $x=2$

VA for g at $x=1$

d)

