

Graphing Rational Functions Quiz Review

1.) $y = \frac{-4}{x-2}$

x-intercept(s): None

y-intercept: (0, 2) $y = \frac{-4}{-2} = 2$

VA: X = 2

HA: Y = 0

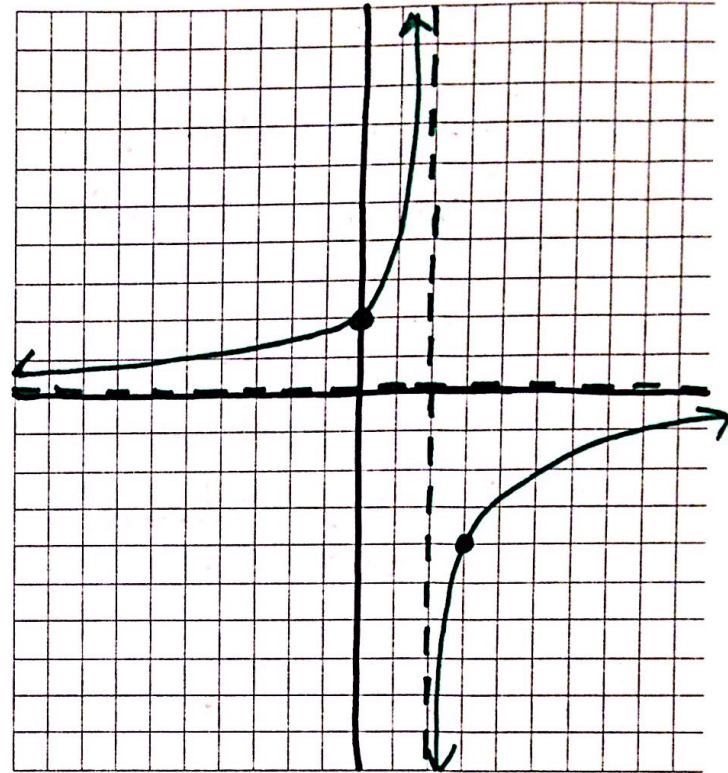
domain: $(-\infty, 2) \cup (2, \infty)$

range: $(-\infty, 0) \cup (0, \infty)$

End Behavior:
as $x \rightarrow \infty, f(x) \rightarrow$ 0

as $x \rightarrow -\infty, f(x) \rightarrow$ 0

Test: $\frac{-4}{3-2} = \frac{-4}{1} = -4$



2.) $y = \frac{3}{(x+1)(x-1)} = \frac{3}{x^2-1}$

x-intercept(s): None

y-intercept: (0, -3) $y = \frac{3}{-1} = -3$

VA: X = -1, 1

HA: Y = 0

domain: $(-\infty, -1) \cup (-1, 1) \cup (1, \infty)$

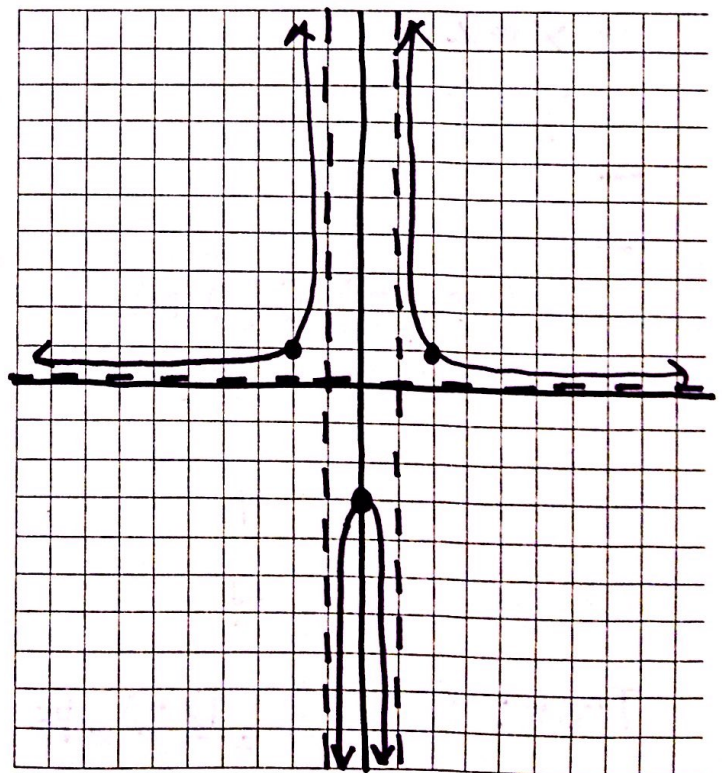
range: $(-\infty, -3] \cup (0, \infty)$

End Behavior:
as $x \rightarrow \infty, f(x) \rightarrow$ 0

as $x \rightarrow -\infty, f(x) \rightarrow$ 0

Test: $\frac{3}{(-2+1)(-2-1)} = \frac{3}{-1(-3)} = \frac{3}{3} = 1$

$\frac{3}{(2+1)(2-1)} = \frac{3}{3(1)} = \frac{3}{3} = 1$



3.) $y = \frac{x}{x+3}$

x-intercept(s): (0,0)

y-intercept: (0,0) $y = \frac{0}{3} = 0$

VA: $x = -3$

HA: $y = 1$

domain: $(-\infty, -3) \cup (-3, \infty)$

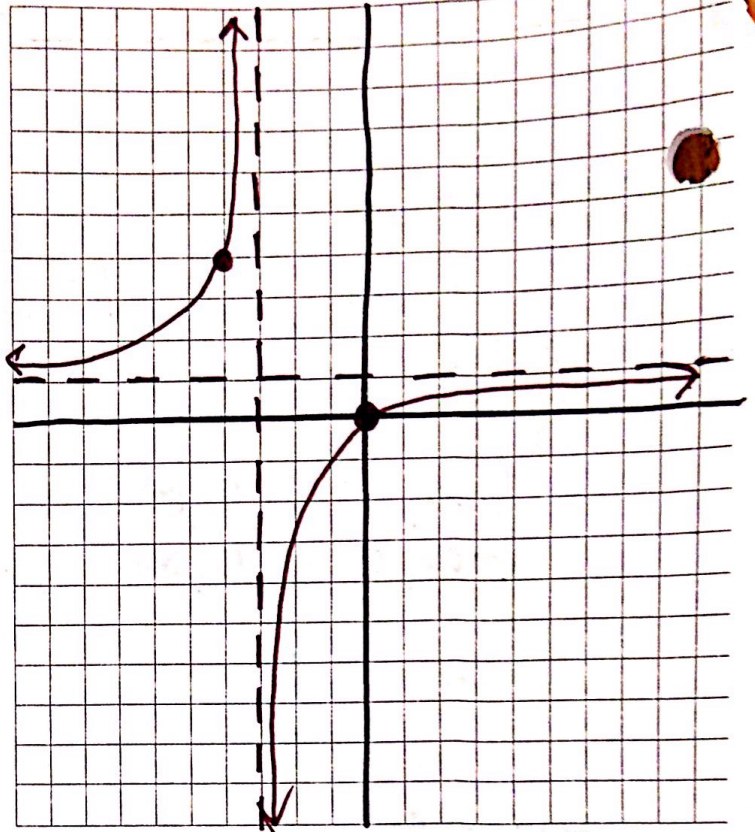
range: $(-\infty, 1) \cup (1, \infty)$

End Behavior:

as $x \rightarrow \infty, f(x) \rightarrow$ 1

as $x \rightarrow -\infty, f(x) \rightarrow$ 1

Test: $\frac{-4}{-4+3} = \frac{-4}{-1} = 4$



4.) $y = \frac{4x+3}{x-2}$

x-intercept(s): $(-\frac{3}{4}, 0)$

y-intercept: $(0, -\frac{3}{2})$ $y = \frac{3}{-2}$

VA: $x = 2$

HA: $y = 4$

SA: _____

hole: _____

domain: $(-\infty, 2) \cup (2, \infty)$

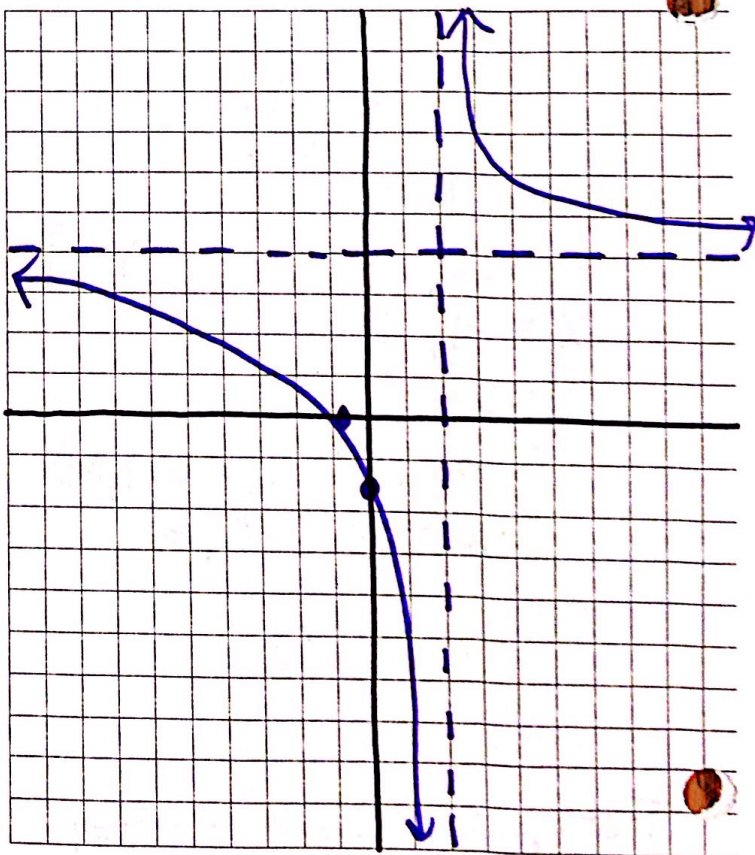
range: $(-\infty, 4) \cup (4, \infty)$

End Behavior:

as $x \rightarrow \infty, f(x) \rightarrow$ 4

as $x \rightarrow -\infty, f(x) \rightarrow$ 4

Test: $\frac{4(3)+3}{3-2} = \frac{12+3}{1} = 15$



5.) $y = \frac{3x-1}{x+2}$

x-intercept(s): $(\frac{1}{3}, 0)$

y-intercept: $(0, -\frac{1}{2})$ $y = -\frac{1}{2}$

VA: $x = -2$

HA: $y = 3$

domain: $(-\infty, -2) \cup (-2, \infty)$

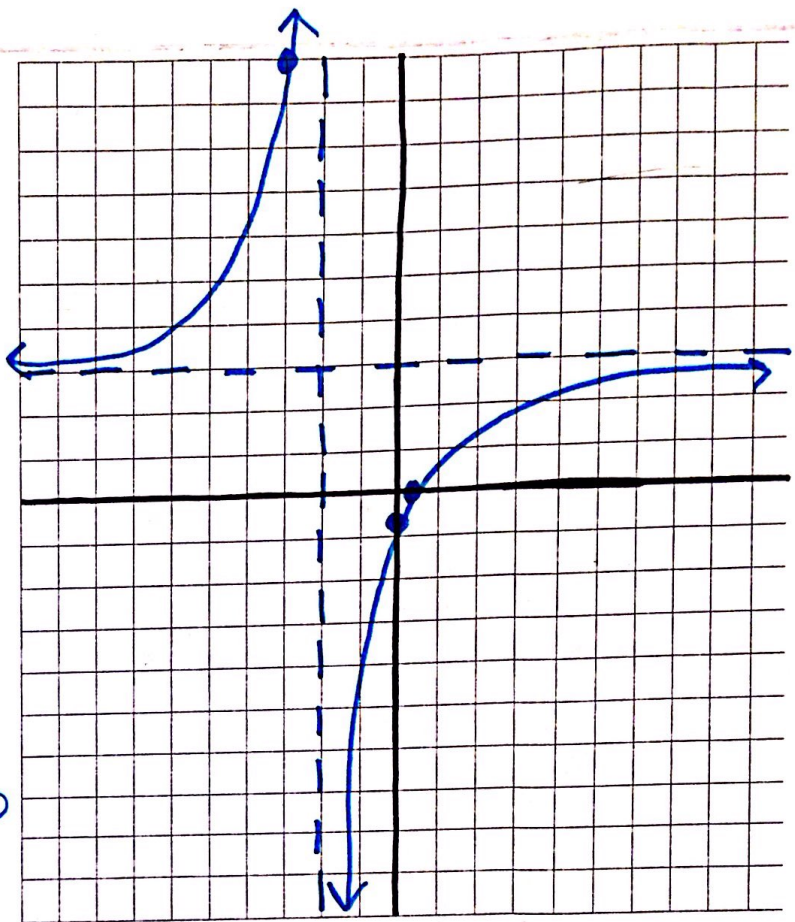
range: $(-\infty, 3) \cup (3, \infty)$

End Behavior:

as $x \rightarrow \infty, f(x) \rightarrow 3$

as $x \rightarrow -\infty, f(x) \rightarrow 3$

Test: $\frac{3(-3)-1}{-3+2} = \frac{-9-1}{-1} = \frac{-10}{-1} = 10$



6.) $y = \frac{x^2 - 2x}{x^2 - 2x - 3} = \frac{x(x-2)}{(x-3)(x+1)}$

~~$\frac{-3}{-2}$~~

x-intercept(s): $(0, 0), (2, 0)$

y-intercept: $(0, 0)$

VA: $x = 3, -1$

HA: $y = 1$

domain: $(-\infty, -1) \cup (-1, 3) \cup (3, \infty)$

range: $(-\infty, 0.25] \cup (1, \infty)$

End Behavior:

as $x \rightarrow \infty, f(x) \rightarrow 1$

as $x \rightarrow -\infty, f(x) \rightarrow 1$

Test: $\frac{(-2)^2 - 2(-2)}{(-2)^2 - 2(-2) - 3} = \frac{8}{5} = 1.6$

$\frac{(1)^2 - 2(1)}{(1)^2 - 2(1) - 3} = \frac{-1}{-4} = \frac{1}{4} = 0.25$

$\frac{(4)^2 - 2(4)}{(4)^2 - 2(4) - 3} = \frac{8}{5} = 1.6$

