

College Algebra

Name: Key

Unit 2B LT 2.6 Quiz Review

Date: _____ Period: _____

1.) $f(x) = \frac{2x^2 - 2}{x^2 - 4x + 3} = \frac{2(x-1)(x+1)}{(x-3)(x-1)}$

Vertical Asymptote: $x = 3$

Horizontal Asymptote: $y = 2$

Hole(s): $(1, -2)$ $\frac{2(1+1)}{1-3} = \frac{4}{-2}$

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

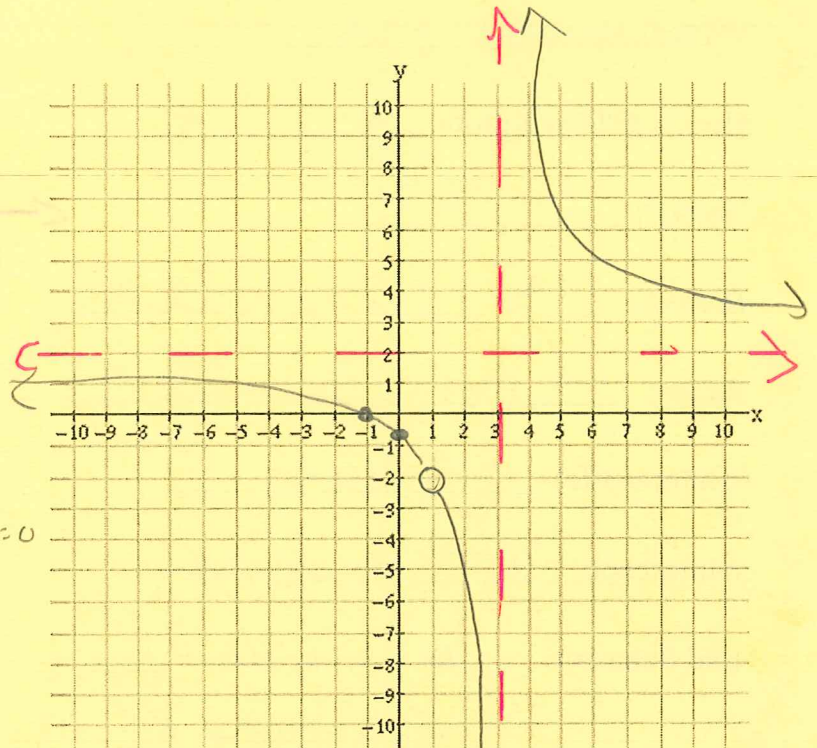
Range: $(-\infty, -2) \cup (-2, 2) \cup (2, \infty)$

x-intercept(s): $x = -1$ $(-1, 0)$ $2(x+1) = 0$

y-intercept: $y = -2/3$ $(0, -2/3)$

End Behavior: As $x \rightarrow -\infty$, $f(x) \rightarrow 2$

As $x \rightarrow \infty$, $f(x) \rightarrow 2$



2.) $f(x) = \frac{3x}{2x^2 - 18} = \frac{3x}{2(x-3)(x+3)}$

Vertical Asymptote: $x = 3$ $x = -3$

Horizontal Asymptote: $y = 0$

Hole(s): none

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

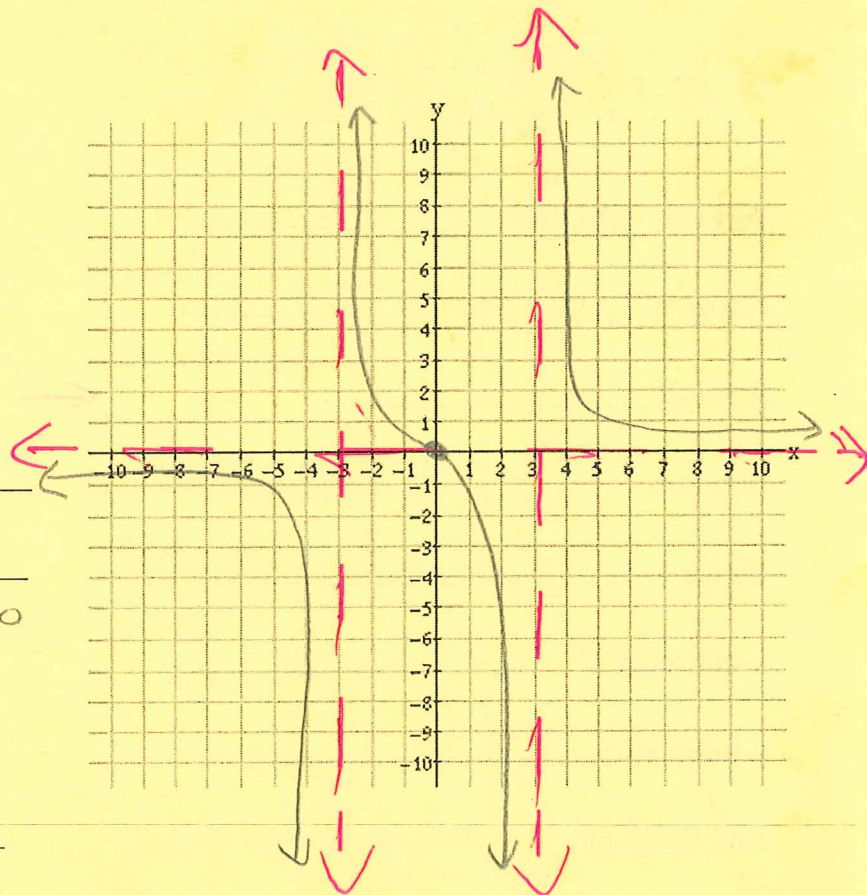
Range: $(-\infty, \infty)$

x-intercept(s): $x = 0$ $(0, 0)$ $3x = 0$

y-intercept: $(0, 0)$

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

As $x \rightarrow \infty$, $f(x) \rightarrow 0$



$$3.) f(x) = \frac{x^2 - x - 6}{x^2 - 4} \quad \frac{(x-3)\cancel{(x+2)}}{(x-2)\cancel{(x+2)}}$$

Vertical Asymptote: $x = 2$

Horizontal Asymptote: $y = 1$

Hole(s): $(-2, \frac{5}{4})$ $\frac{-5}{-4}$

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

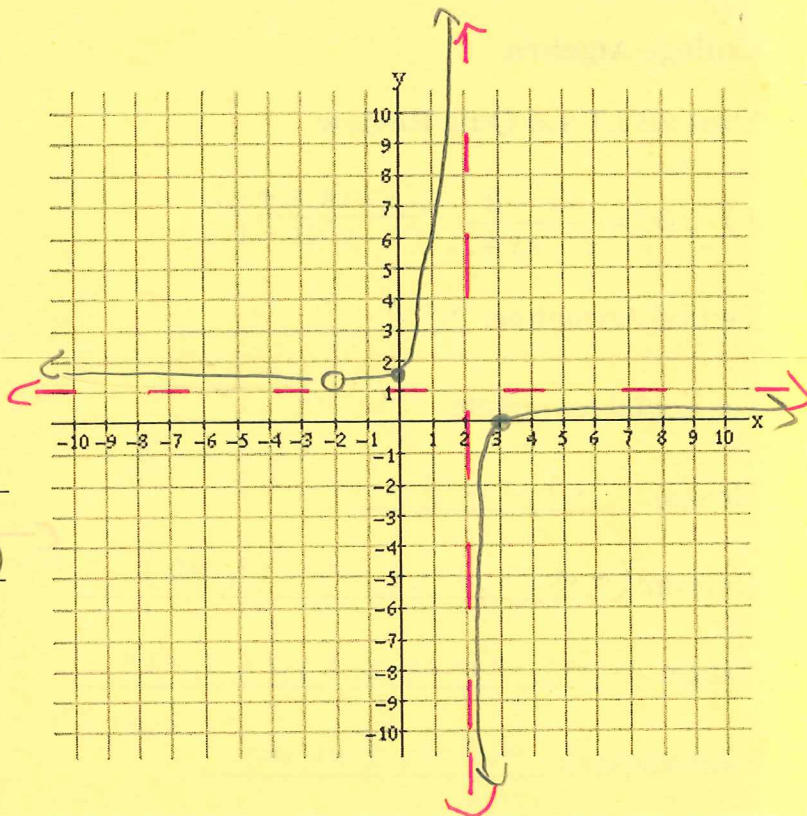
Range: $(-\infty, 1) \cup (1, \frac{5}{4}) \cup (\frac{5}{4}, \infty)$

x-intercept(s): $x = 3$ $(3, 0)$ $x - 3 = 0$

y-intercept: $(0, 1.5)$ or $(0, \frac{3}{2})$

End Behavior: As $x \rightarrow -\infty$, $f(x) \rightarrow 1$

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



$$4.) f(x) = \frac{x^2 - 5x - 6}{x^2 - 4x - 12} \quad \frac{(x-6)\cancel{(x+1)}}{(x-6)\cancel{(x+2)}}$$

Vertical Asymptote: $x = -2$

Horizontal Asymptote: $y = 1$

Hole(s): $(6, \frac{7}{8})$ $\frac{7}{8}$

Domain: $(-\infty, -2) \cup (-2, 6) \cup (6, \infty)$

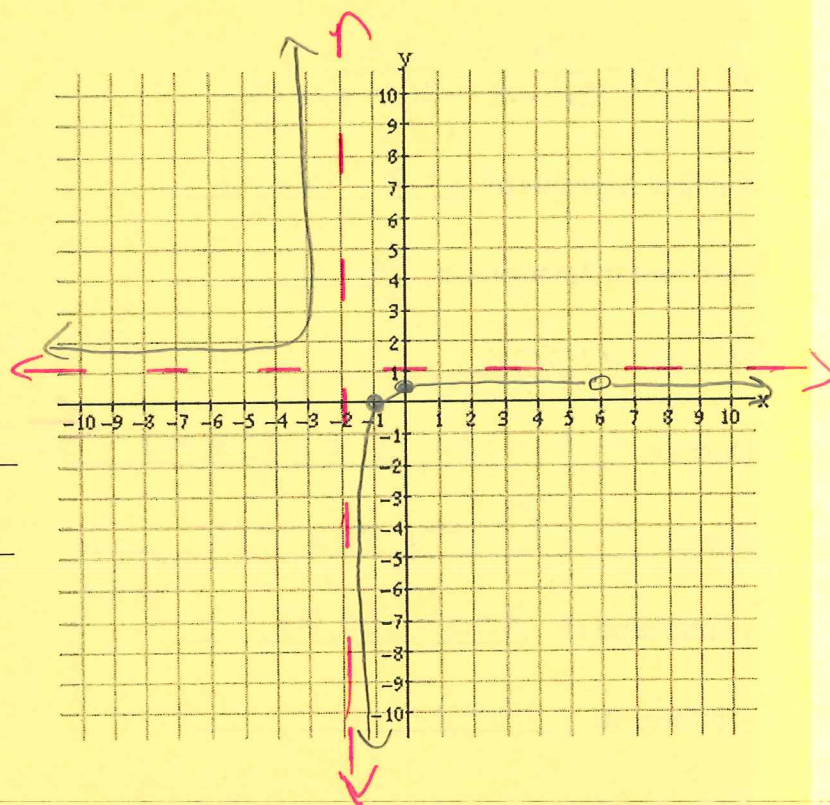
Range: $(-\infty, \frac{7}{8}) \cup (\frac{7}{8}, 1) \cup (1, \infty)$

x-intercept(s): $x = -1$ $(-1, 0)$ $x + 1 = 0$

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

End Behavior: As $x \rightarrow -\infty$, $f(x) \rightarrow 1$

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



5.) Given $h(x) = \frac{6x-9}{2x^2+x-6}$, which of the following key information holds true? **Circle all that apply.**

~~a) Domain: $(-\infty, -2) \cup (-2, \infty)$
(no hole)~~

$$\frac{3(2x-3)}{(2x+3)(x+2)}$$

VA: $x = -2$

hole: $(\frac{3}{2}, \frac{6}{7})$

$\frac{3}{\frac{3}{2}+2} = \frac{3}{3.5}$

b) Range: $(-\infty, 0) \cup (0, \frac{6}{7}) \cup (\frac{6}{7}, \infty)$

~~c) Zero: $x = 3$~~

$y = 0$

~~d) Horizontal Asymptote: $y = 3$~~

e) Vertical Asymptote: $x = -2$

f) Hole: $(\frac{3}{2}, \frac{6}{7})$

6.) Given $h(x) = \frac{3x-21}{2x^2+x-28}$, which of the following key information holds true? **Circle all that apply.**

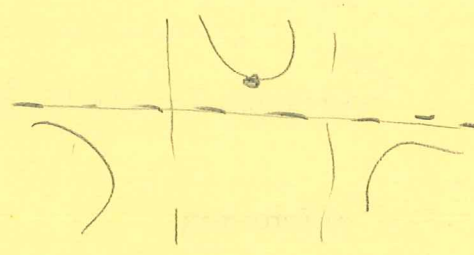
a) Domain: $(-\infty, -4) \cup (-4, \frac{7}{2}) \cup (\frac{7}{2}, \infty)$

$$\frac{3(x-7)}{(2x-7)(x+4)}$$

VA: $x = -4$ $x = \frac{7}{2}$

~~b) Range: $(-\infty, 0) \cup (0, \infty)$~~

HA: $y = 0$



c) Zero: none

d) Horizontal Asymptote: $y = 0$

e) Vertical Asymptote: $x = \frac{7}{2}$ and $x = -4$

f) Hole: none

7.) Given $h(x) = \frac{4x-10}{2x^2+x-15}$, which of the following key information holds true? **Circle all that apply.**

a) Domain: $(-\infty, -3) \cup (-3, \frac{5}{2}) \cup (\frac{5}{2}, \infty)$

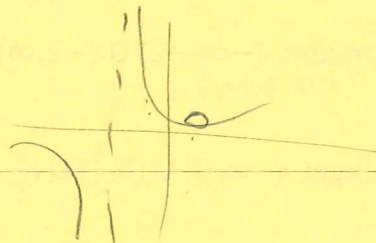
b) Range: $(-\infty, 0) \cup (0, \infty)$ (hole)

c) Zero: $x=4$

d) Horizontal Asymptote: $y = 0$

e) Vertical Asymptote: $x = -3$

f) Hole: $(\frac{5}{2}, \frac{4}{11})$



$$\frac{2(2x-5)}{(2x-5)(x+3)}$$

VA $x = -3$

HA $y = 0$

hole $(\frac{5}{2}, \frac{4}{11})$

$$\frac{2}{\frac{5}{2}+3}$$

$$\frac{2}{11/2}$$

$$\frac{4}{11}$$

8.) Given $h(x) = \frac{x^2-x-6}{x^2-4}$, which of the following key information holds true? **Circle all that apply.**

a) Domain: $(-\infty, 0) \cup (0, \infty)$

b) Range: $(-\infty, 1) \cup (1, \frac{5}{4}) \cup (\frac{5}{4}, \infty)$

c) Zero: $x=3$

d) Horizontal Asymptote: $y = 1$

e) Vertical Asymptote: $x = 1$

f) Hole: $(-2, \frac{5}{4})$

$$\frac{(x-3)(x+2)}{(x-2)(x+2)}$$

VA $x = 2$

HA $y = 1$

hole $(-2, \frac{5}{4})$

$$\frac{-5}{-4}$$

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