Unit 3 Review Day

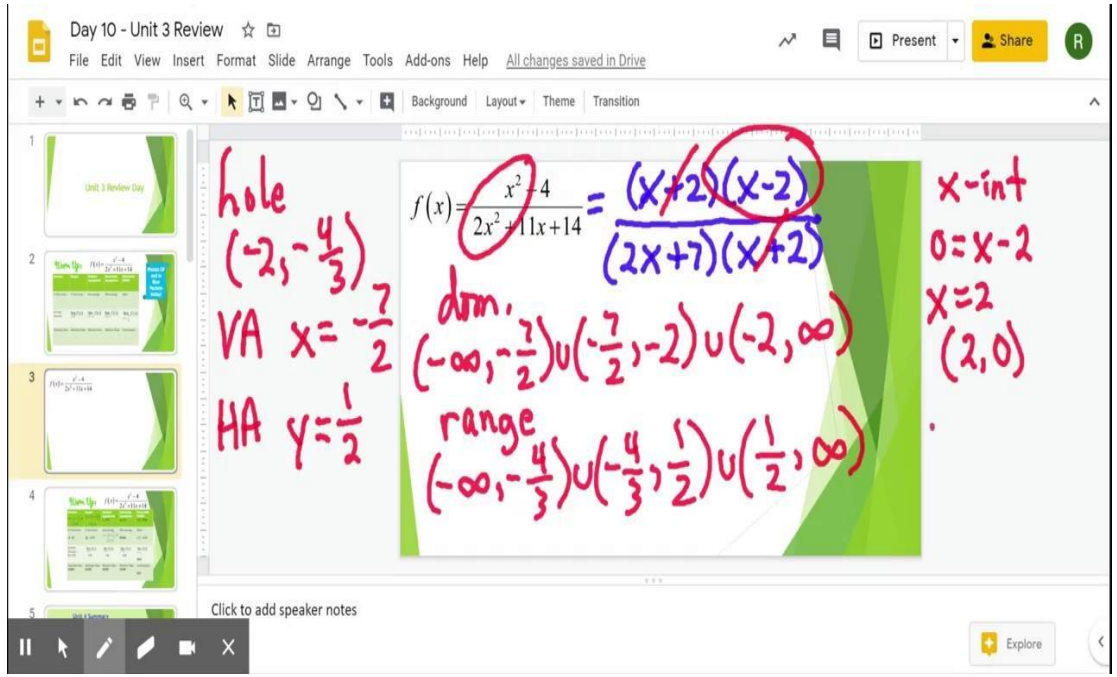
Warm Up:

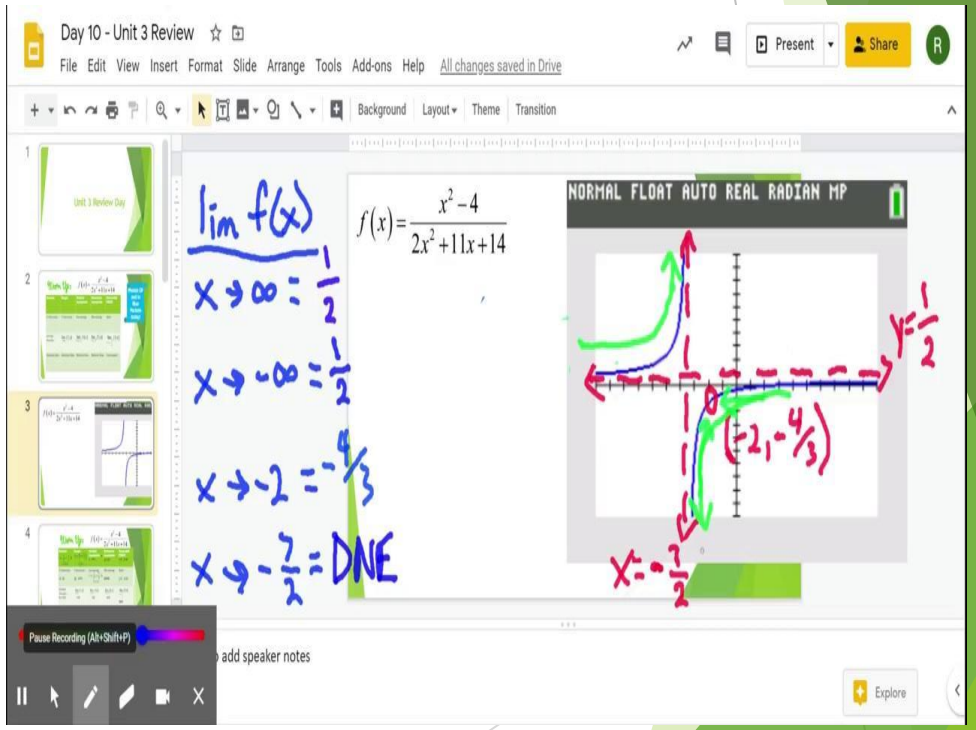
$$f(x)=\frac{x^2-4}{2x^2+11x+14}$$

Domain:	Range:	Vertical Asymptote:	Horizontal Asymptote:	Removable POINT:
X-intercept:	Y-intercept:	Increasing:	Decreasing:	Hole:
Infinite discont.:	$\lim_{x\to\infty} f(x)$	$\lim_{x\to-\infty} f(x)$	$\lim_{x\to-2} f(x)$	$\lim_{x\to-\frac{7}{2}} f(x)$
Absolute Min:	Absolute Max:	Relative Min:	Relative Max:	Continuous?

Phones OF and in Blue Pockets today!

$$f(x)=\frac{x^2-4}{2x^2+11x+14}$$





Warm Up:

$$f(x)=\frac{x^2-4}{2x^2+11x+14}$$

Domain: $(-\infty,-\frac{7}{2})\cup(-\frac{7}{2},-2)\cup(-2,\infty)$	**Range:** $(-\infty,-\frac{4}{3})\cup(-\frac{4}{3},\frac{1}{2})\cup(\frac{1}{2},\infty)$	**Vertical Asymptote: x = -7/2**	**Horizontal Asymptote: y=1/2**	**Removable POINT: (-2, -4/3)**
X-intercept: **(2, 0)**	Y-intercept: **(0, -2/7)**	Increasing: $(-\infty,-\frac{7}{2})\cup(-\frac{7}{2},-2)\cup(-2,\infty)$	Decreasing: **NONE**	Hole: **(-2, -4/3)**
Infinite discont.: **X=-7/2**	$\lim_{x\to\infty} f(x)$ **1/2**	$\lim_{x\to-\infty} f(x)$ **1/2**	$\lim_{x\to-2} f(x)$ **-4/3**	$\lim_{x\to-\frac{7}{2}} f(x)$ **DNE**
Absolute Min: **NONE**	Absolute Max: **NONE**	Relative Min: **NONE**	Relative Max: **NONE**	Continuous? **NO!**

Unit 4 Summary

Domain: Consider the **vertical asymptotes** and the **x-value** of the **hole (if they exist)** and **x-intercept** (esp. for sq. roots)

Range: Consider the **horizontal asymptotes** and the **y-value** of the **hole (if they exist)** and **x-intercept** (esp. if HA: y = 0)

Limits: Consider holes, horizontal asymptotes, end behavior

x-intercept: Set **y = 0** and solve for **x**.

y-intercept: Set **x = 0** and solve for **y**.

Min/Max:

Y-value occurs at x-value

Inc/Dec:

Write in terms of x-values!

Use brackets for max/min

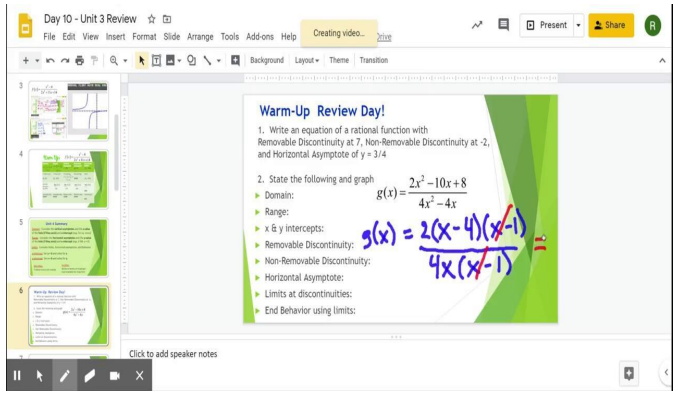
Warm-Up Review Day!

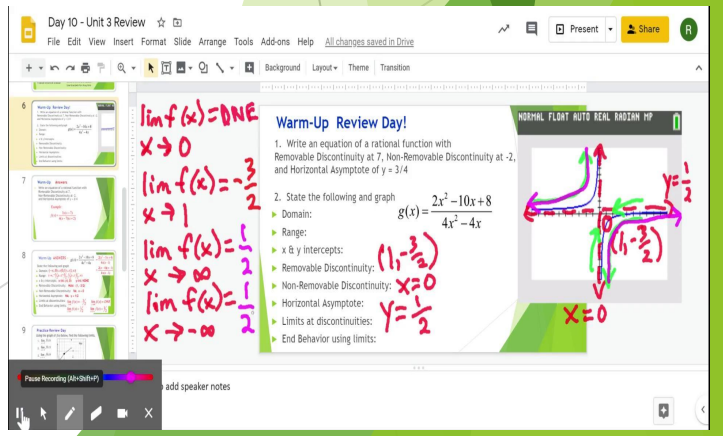
1. Write an equation of a rational function with Removable Discontinuity at 7, Non-Removable Discontinuity at -2, and Horizontal Asymptote of y = 3/4

2. State the following and graph

$$g(x) = \frac{2x^2 - 10x + 8}{4x^2 - 4x}$$

- Domain:
- Range:
- x & y intercepts:
- Removable Discontinuity:
- Non-Removable Discontinuity:
- Horizontal Asymptote:
- Limits at discontinuities:
- End Behavior using limits:



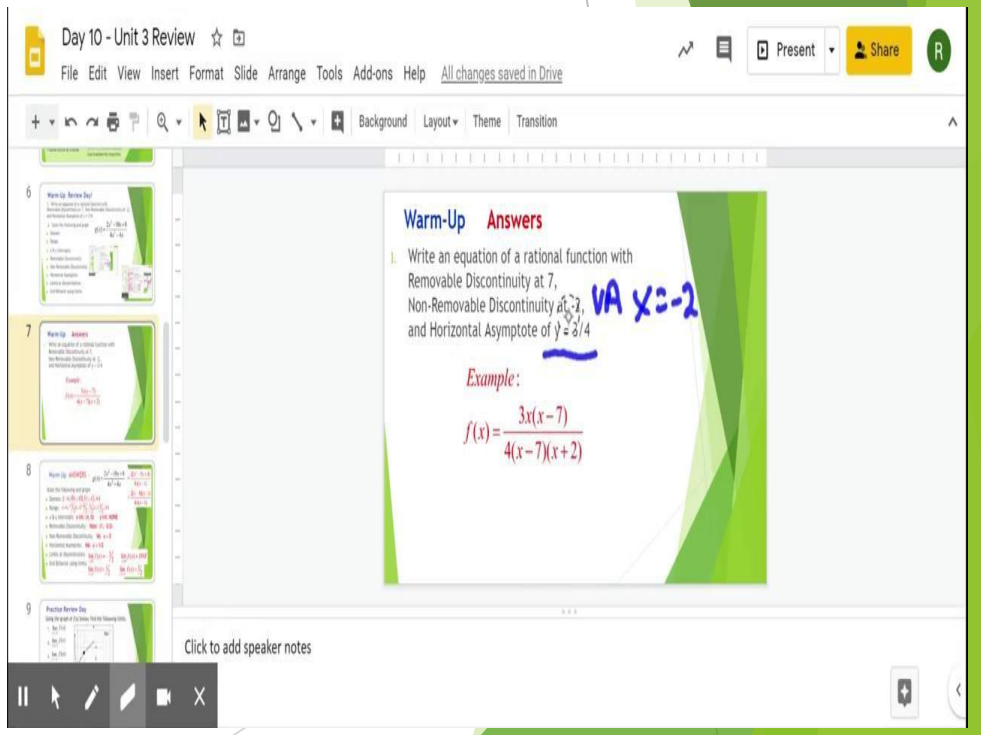


Warm-Up Answers

1. Write an equation of a rational function with Removable Discontinuity at 7, Non-Removable Discontinuity at -2, and Horizontal Asymptote of y = 3/4

$$Example:$$

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



Warm-Up ANSWERS ~

$$g(x)=\frac{2x^2-10x+8}{4x^2-4x}=\frac{2(x^2-5x+4)}{4x(x-1)}=\frac{2(x-4)(x-1)}{4x(x-1)}$$

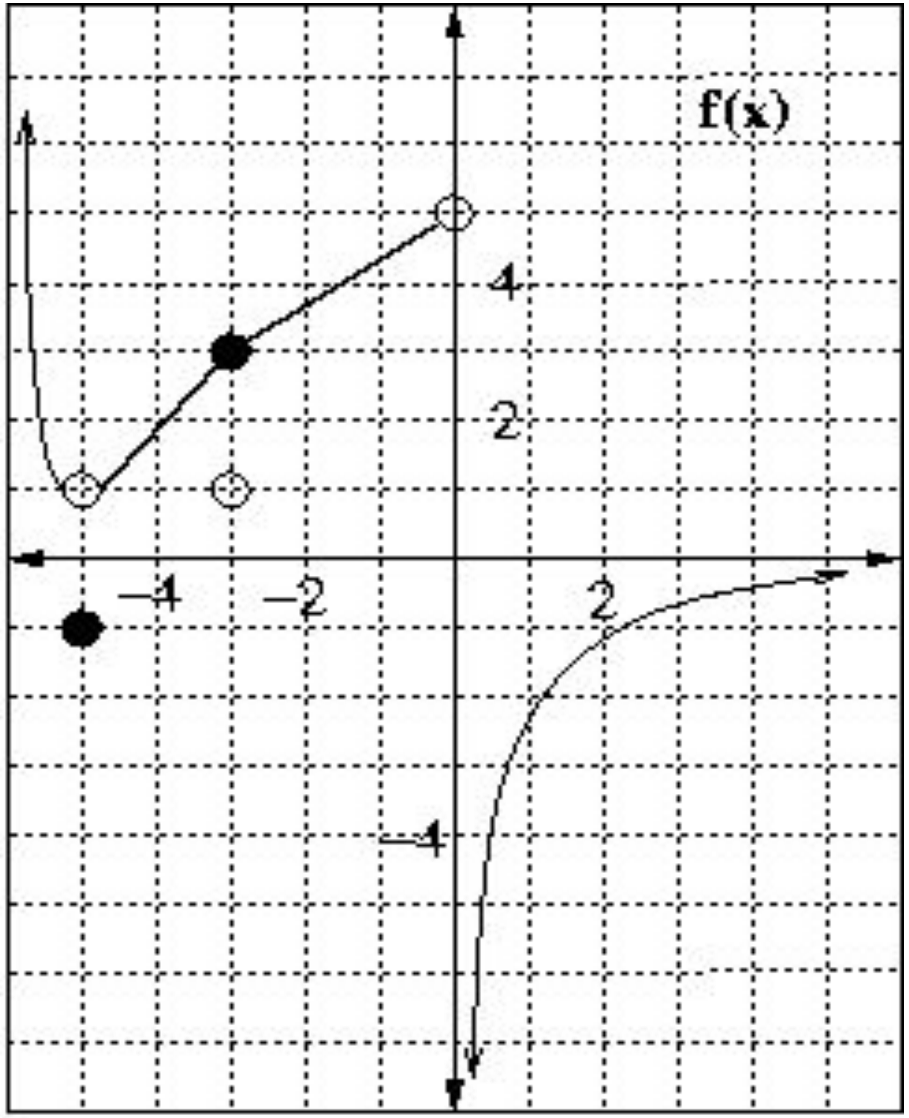
State the following and graph

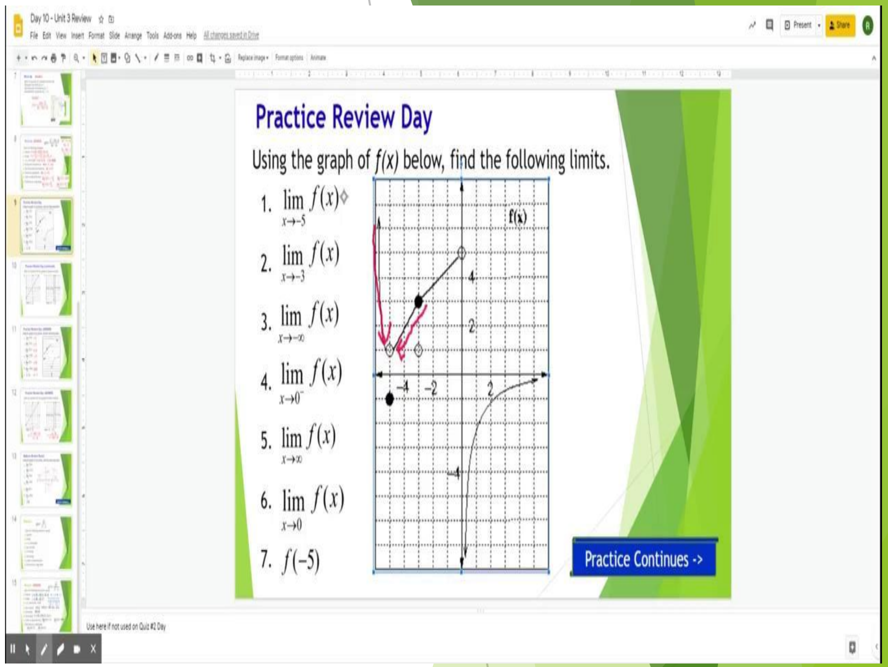
- Domain: $(-\infty,0)\cup(0,1)\cup(1,\infty)$
- Range: $(-\infty,-3/2)\cup(-3/2,1/2)\cup(1/2,\infty)$
- x & y intercepts: **x-int: (4, 0)** **y-int: NONE**
- Removable Discontinuity: **Hole: (1, -3/2)**
- Non-Removable Discontinuity: **VA: x = 0**
- Horizontal Asymptote: **HA: y = 1/2**
- Limits at discontinuities: $\lim_{x\to 1} f(x)=-3/2$ $\lim_{x\to 0} f(x)=DNE$
- End Behavior using limits: $\lim_{x\to\infty} f(x)=1/2$ $\lim_{x\to-\infty} f(x)=1/2$

Practice Review Day

Using the graph of *f(x)* below, find the following limits.

1. $\lim_{x \to -5} f(x)$
2. $\lim_{x \to -3} f(x)$
3. $\lim_{x \to -\infty} f(x)$
4. $\lim_{x \to 0^-} f(x)$
5. $\lim_{x \to \infty} f(x)$
6. $\lim_{x \to 0} f(x)$
7. $f(-5)$



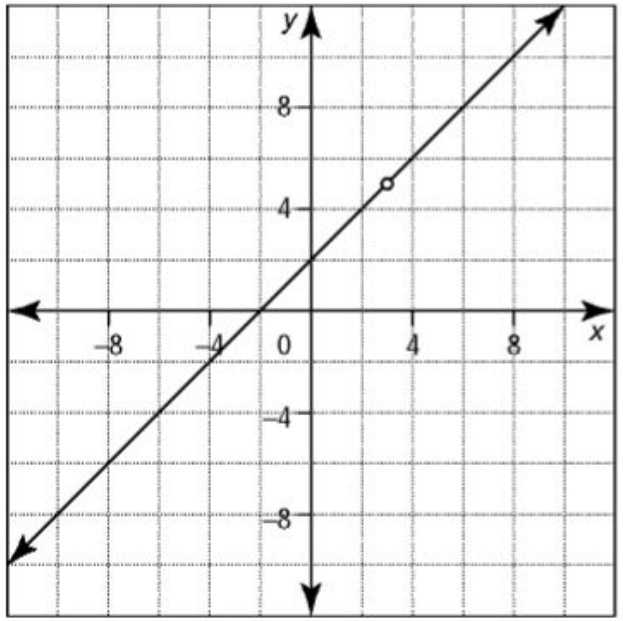


Practice Continues ->

Practice Review Day (continued)

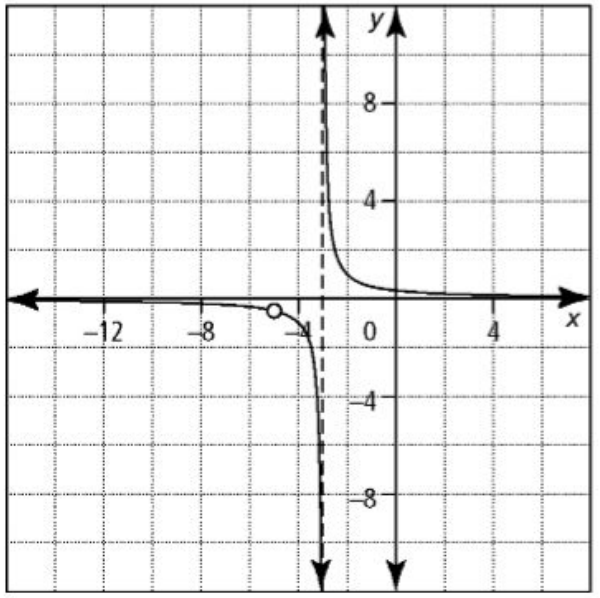
Write an equation for the graphed rational function.

8.

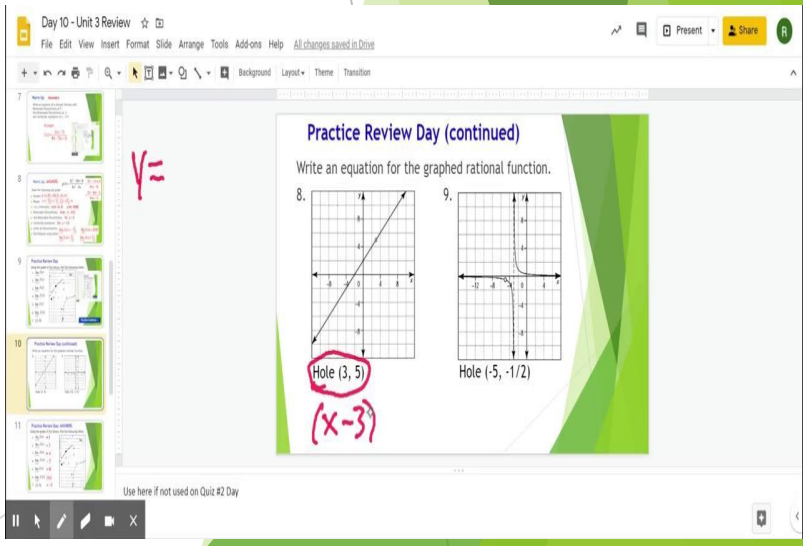


Hole (3, 5)

9.



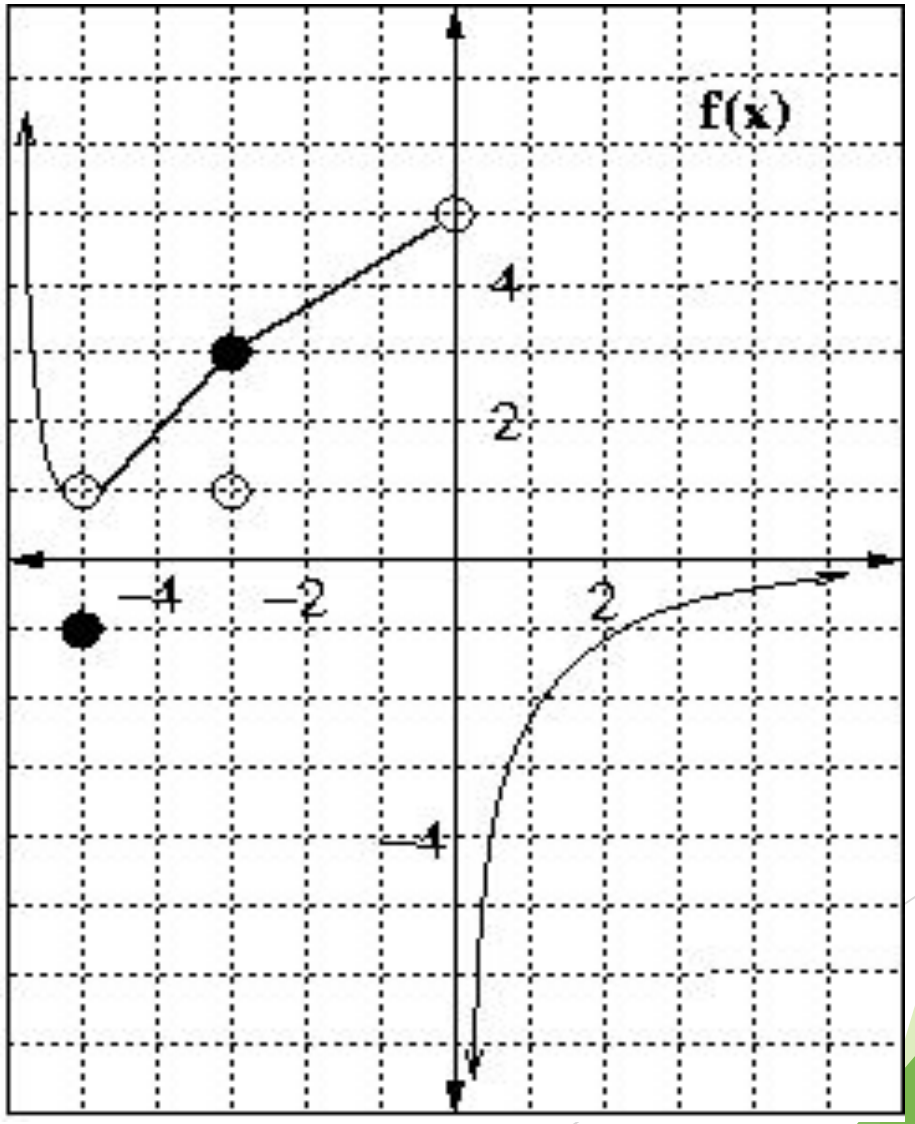
Hole (-5, -1/2)



Practice Review Day: ANSWERS

Using the graph of *f(x)* below, find the following limits.

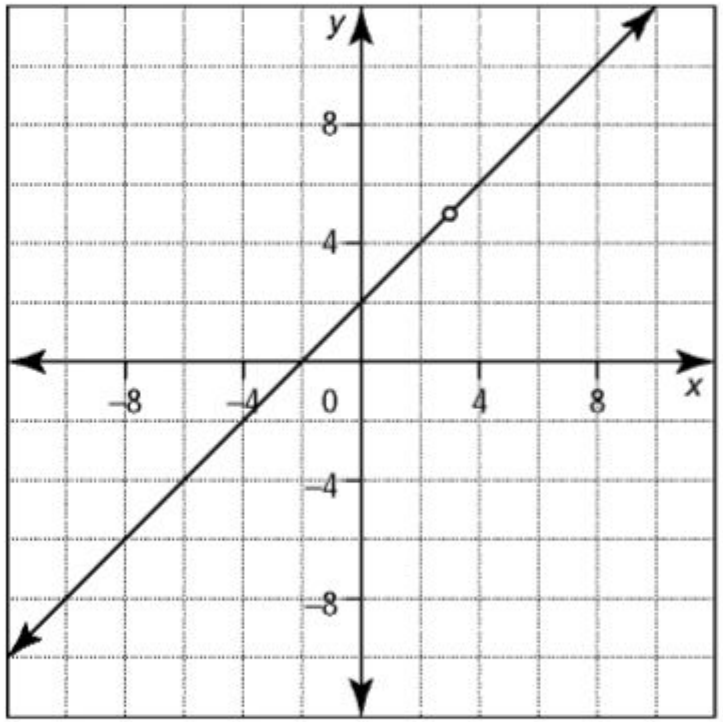
1. $\lim_{x \to -5} f(x) = 1$
2. $\lim_{x \to -3} f(x) = 3$
3. $\lim_{x \to -\infty} f(x) = \infty$
4. $\lim_{x \to 0^-} f(x) = 5$
5. $\lim_{x \to \infty} f(x) = 0$
6. $\lim_{x \to 0} f(x)$ *DNE*
7. $f(-5) = -1$



Practice Review Day: ANSWERS

Write an equation for the graphed rational function.

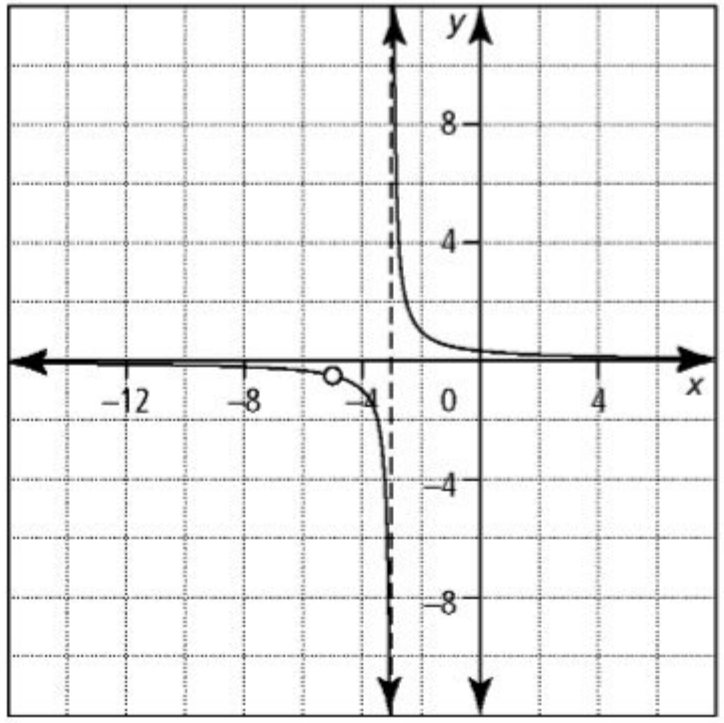
8.



Hole (3, 5)

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

9.



Hole (-5, -1/2)

$$y = \frac{(x+5)}{(x+5)(x+3)}$$

Midterm Review Packet

Using the graph of *f(x)* below, find the following limits.

1. $\lim_{x \to 1} f(x)$
2. $\lim_{x \to 1^-} f(x)$
3. $\lim_{x \to -4} f(x)$
4. $\lim_{x \to -\infty} f(x)$
5. $\lim_{x \to \infty} f(x)$
6. $\lim_{x \to 6} f(x)$
7. $f(6)$