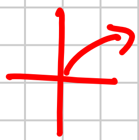
Chp 4 Review

Note Title 2012-10-10

1 Determine the range of the function $y = \sqrt{3x - 9} + 2$.

↳ + Domain

A. $y \geq 0$
B. $y \geq 2$
C. $y \geq 3$
D. $y \geq 9$

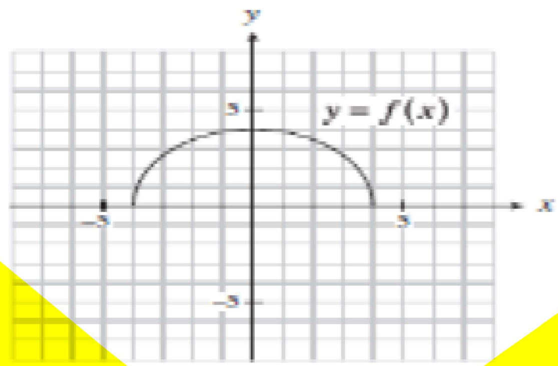
$y = \sqrt{x}$  $\therefore +2$ Up 2 $\boxed{\text{Range: } y \geq 2}$ B

Domain: ? $3x - 9 \geq 0$ $3x \geq 9$

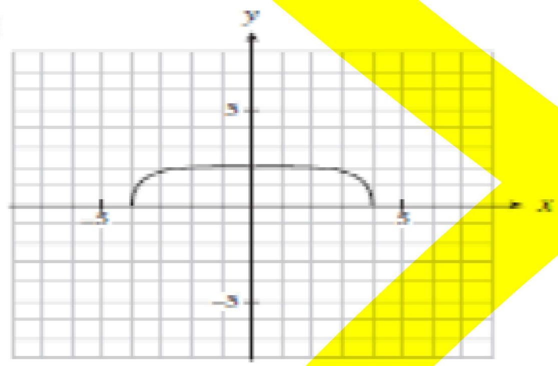
$\boxed{\text{Domain: } x \geq 3}$

2

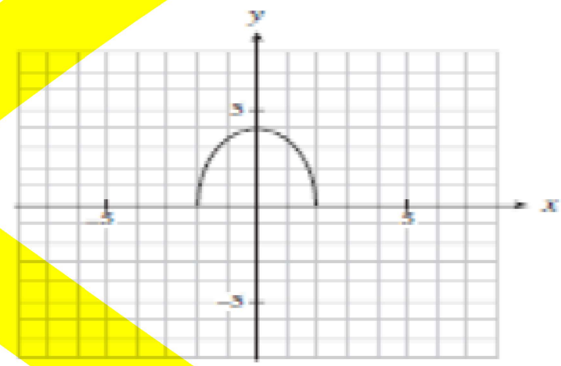
Given the graph of $y = f(x)$ as shown, determine the graph of $y = \sqrt{f(x)}$.



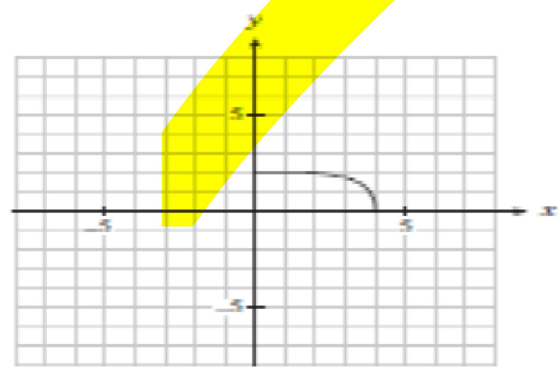
A.



B.



C.



D.

2

Determine all solutions for the equation $\sqrt{x+4} = 3x$.

A. -0.61, 0.72

B. -0.61

C. 0.72

D. 1.33

$$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$$

$$x+4 = 9x^2$$

$$0 = 9x^2 - x - 4$$

$$x = \frac{1 \pm \sqrt{1-4(9)(-4)}}{18}$$

$$x = \frac{1 \pm \sqrt{145}}{18} = \boxed{0.72}, \cancel{-0.61}$$

C

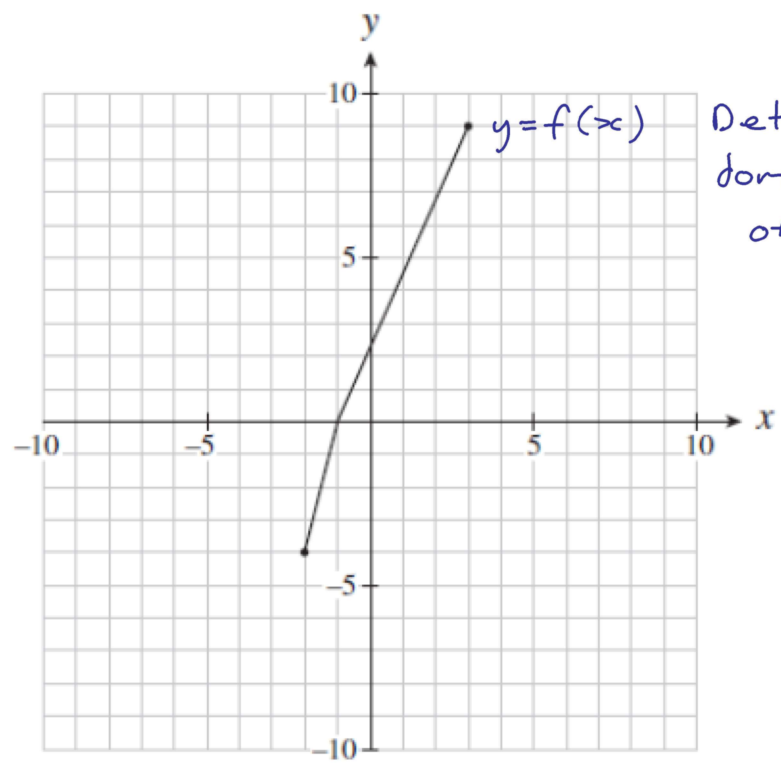
Check

3

The graph of $y = f(x)$ is sketched below. Determine the domain and range of $y = \sqrt{f(x)}$

[redacted]

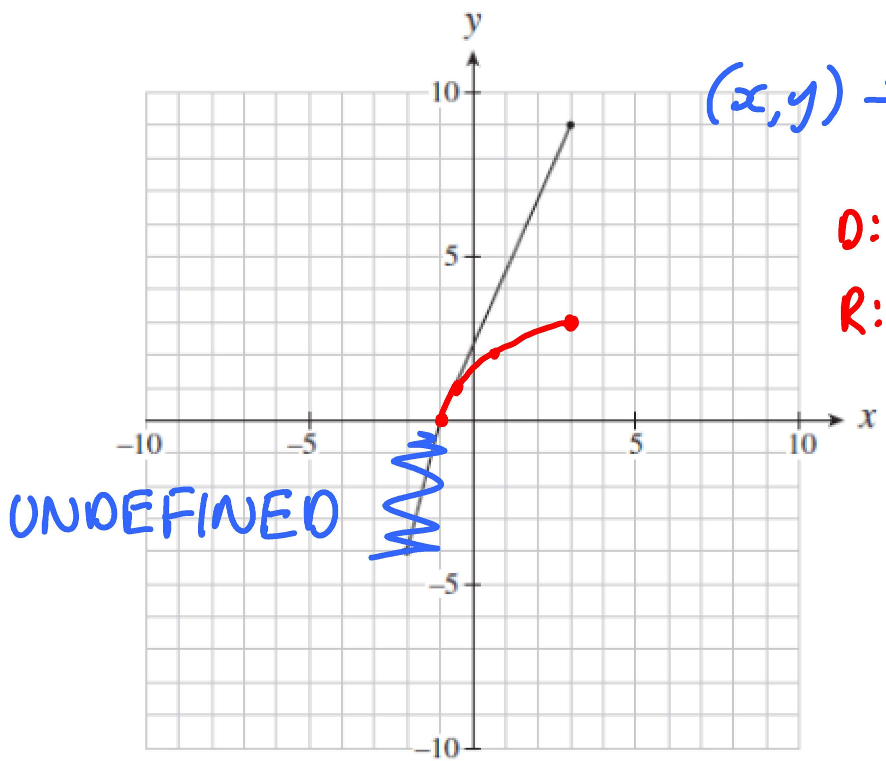
3



Determine the domain + range of $y = \sqrt{f(x)}$

The graph of $y = f(x)$ is sketched below. Determine the domain and range of $y = \sqrt{f(x)}$

[redacted]



$(x, y) \rightarrow (x, \sqrt{y})$

D: $-1 \leq x \leq 3$

R: $0 \leq y \leq 3$

4. Given $f(x) = \frac{x^2 - x - 6}{x^2 - 9}$ and $g(x) = \frac{x}{x^2-9}$, determine the asymptotes, holes, & intercepts. Graph $f(x)$ & $g(x)$.

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

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

Vert. Asym: $x = -3$

Horiz. Asym: $y = 1$

Hole: $\left(3, \frac{5}{6}\right)$

x-int: $(-2, 0)$

y-int: $\left(0, \frac{2}{3}\right)$

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

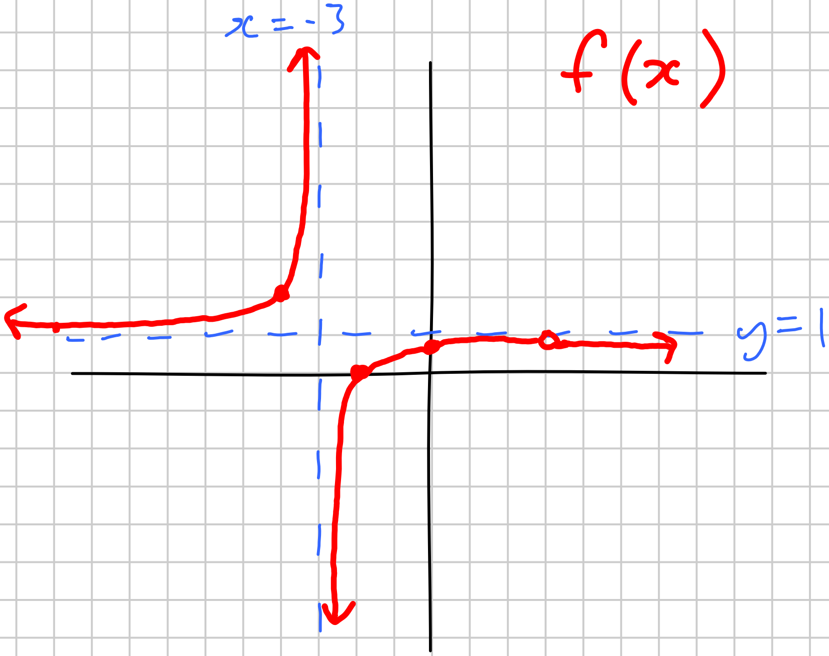
Vert. Asym: $x = \pm 3$

Horiz Asym: $y = 0$

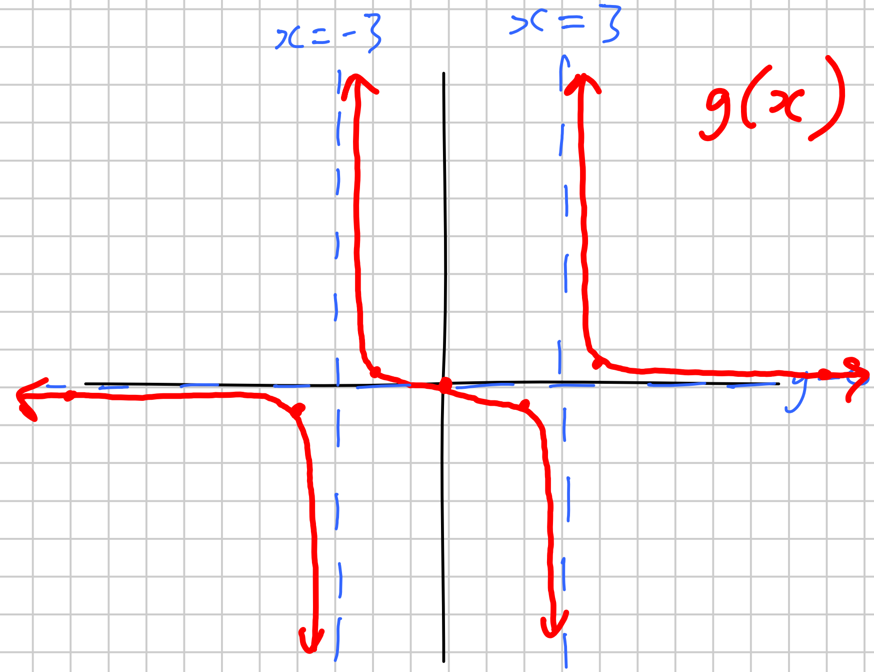
No Holes

x-int: $(0,0)$

y-int: $(0,0)$



x	-4	-2	-10	10
y	2	0	1.1	0.9



x	-4	-2	2	4	-10	10
y	-0.6	0.4	-0.4	0.6	-0.1	0.1

7. For the function $f(x) = \frac{x^2 - 4}{x^2 - 2x}$, which of the following statements explain the behaviour of the graph of f for the values of a variable near a non-permissible value?

A. When x is close to 2 on either side, f is close to 2.
When x is just to the right of 0, f is a large positive value.
When x is just to the left of 0, f is a large negative value.

B. When x is close to 2 on either side, f is close to 4.
When x is just to the right of 0, f is a large positive value.
When x is just to the left of 0, f is a large negative value.

C. When x is close to 2 on either side, f is close to 2.
When x is just to the right of 0, f is a large negative value.
When x is just to the left of 0, f is a large positive value.

D. When x is close to 2 on either side, f is close to 4.
When x is just to the right of 0, f is a large negative value.
When x is just to the left of 0, f is a large positive value.

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

$$y = \frac{x+2}{x}$$

x	1.9	2.1	-0.1	0.1
y	2.1	1.95	-19	21

5

Determine the equations of all asymptotes for the graph of $y+2=\frac{1}{x-1}$.

A. $x=-1$, $y=-2$

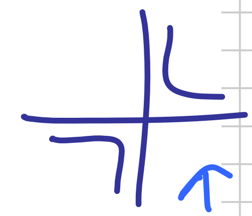
B. $x=-1$, $y=2$

C. $x=1$, $y=-2$

D. $x=1$, $y=2$

$y=\frac{1}{x-1}-2$

Right 1 Down 2



$y=\frac{1}{x}$

OR

$y=\frac{1}{x-1}-2$

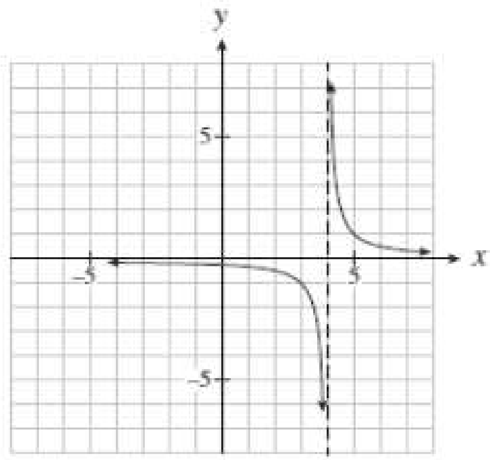
$y=\frac{1}{x-1}-\frac{2(x-1)}{x-1}$ $y=\frac{1-2x+2}{x-1}$ $y=\frac{-2x+3}{x-1}$

$y=-2$ $x=1$

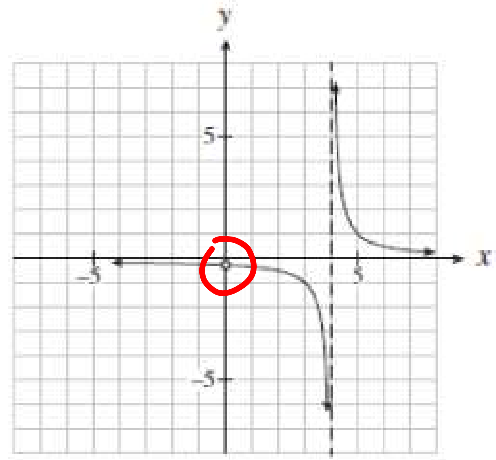
5

Which of the following best represents the graph of the rational function $y = \frac{x}{x^2 - 4x}$?

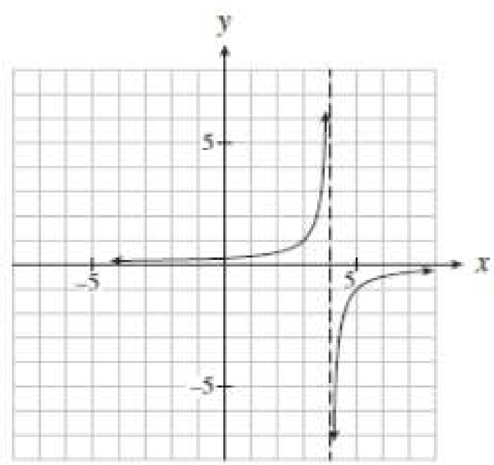
A.



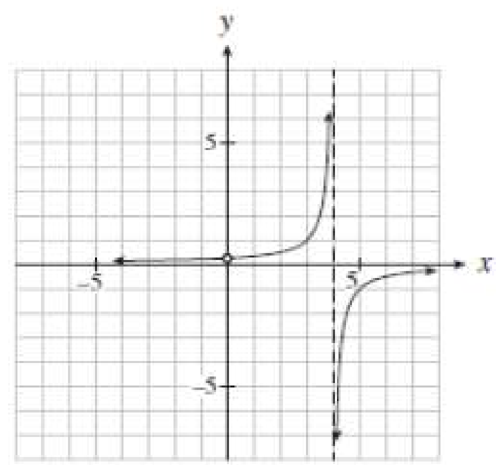
B.



C.



D.



$y = \frac{x}{x^2 - 4x}$?

$y = \frac{\cancel{x}\ 1}{\cancel{x}(x-4)}$

$y = \frac{1}{x-4}$

$x = 4$ Vert.

$y = 0$ Horiz.

Hole $(0, -\frac{1}{4})$

Review: Pg 192

\# 1-30

*Not 18, 19, 27, 28

* \#16 $x \to -\infty$ "Find horizontal asymptote"

$y = \frac{3}{2} = 1.5$

Don't worry about 1.5^+ or 1.5^-