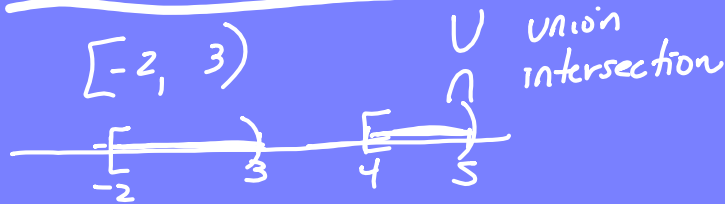


SEMESTER REVIEW



Domain	Restrictions	Domain
Polynomial	None	$\mathbb{R} (-\infty, \infty)$
Rational xxx	Denom $\neq 0$	$x \neq \mathbb{I}_3$
Odd Root	None	$(-\infty, \infty) \mathbb{R}$
Even Root	Must contain + values	Test Points

$$f(x) = \frac{\sqrt{x^2 - 2x - 24}}{\sqrt{x-8}}$$

$x \neq 8$

$(x-6)(x+4)$
 $x = 6, -4$

$(-\infty, -4] \cup [6, 8) \cup (8, \infty)$

$$f(x) = \sqrt{x+1} \quad g(x) = \frac{x^2}{x^2-4} \quad x \neq -2, 2$$

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

$x \neq 3$

$[-1, 2) \cup (2, 3) \cup (3, \infty)$

Find $f^{-1}(x)$.

- 1) Switch x & y
- 2) Solve for y .

$$f(x) = \sqrt[4]{3x-2}$$

$$x = (\sqrt[4]{3y-2})^4$$

$$x^4 = 3y - 2$$



$$\frac{x^4 + 2}{3} = \frac{3y}{3}$$

$$6/ \quad y = mx + b \leftarrow \text{slope-int}$$

$$y - y_1 = m(x - x_1) \leftarrow \text{point-slope}$$

$$2x - 5y = 8 \quad m = -\frac{A}{B} = \frac{+2}{+5}$$

7) relative max/min - any high/low
 absolute max/min - the highest/lowest pt.

9) Even  $f(-x) = f(x)$
 Odd  $f(-x) = -f(x)$
 ↑ origin

$$c) \quad f(x) = \frac{x}{x^2 - 9} \quad f(-x) = \frac{-x}{(-x)^2 - 9} = \frac{-x}{x^2 - 9}$$

$$= -\frac{x}{x^2 - 9}$$

Odd

Asymptotes - Rational func

Holes - upon terms cancel from num + denom.

Vertical

Where denom = 0

Horizontal

Pull highest power from num + denom.

Slant

- numerator is one power higher than denom

* Long Division

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

Vertical: $x = 0$ $3x + 0$

Slant

$$\begin{array}{r} 2x^2 \overline{) 6x^3 + 0x^2 - 3x + 1} \\ \underline{6x^3} \\ 0 + 0x^2 \end{array}$$

$$y = 3x$$

$$f(x) = \frac{2x^2 - x}{2x^2 + 5x - 3} = \frac{x(2x-1)}{(2x-1)(x+3)}$$

Vertical: $(2x-1)(x+3)$

$$2x-1=0$$

$$x=1/2$$

Horiz: $\frac{2x^2}{2x^2} = 1$

$$y=1$$

Hole at $x=1/2$

Vertical

$$x \neq -3$$

Horiz. $y=1$


$$y = x$$


$$y = |x|$$

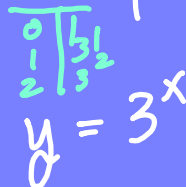

$$y = [x]$$

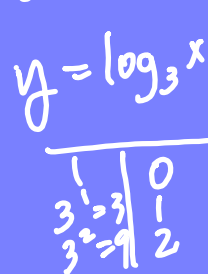

$$y = \frac{1}{x}$$

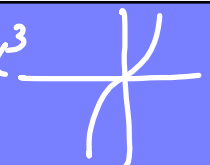

$$y = \frac{1}{x^2}$$



$$y = x^2$$


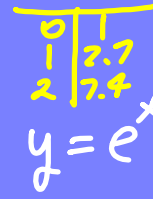
$$y = \sqrt{x}$$

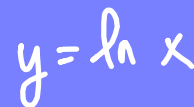

$$y = 3^x$$


$$y = \log_3 x$$


$$y = x^3$$


$$y = \sqrt[3]{x}$$


$$y = e^x$$


$$y = \ln x$$


$$y = -\sqrt{x} \text{ over } x\text{-axis}$$


$$y = \sqrt{-x} \text{ over } y\text{-axis}$$


$$y = \frac{1}{x^3}$$
