

$$D: \{x \mid x \neq 1\}$$

$$R: \{y \mid y \neq 0\}$$

$$f(x) = \frac{1}{x}$$

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j. $f(x) = \frac{x+4}{x-2}$ $m=n$
vertical asymptotes

Domain:
What can x not
be?

$$D: \{x \mid x \neq 2\}$$

Range rules for rational (fraction) functions:

Horizontal:

$$y=0 \text{ if } \begin{matrix} m > n \\ \text{denom} & \text{num.} \end{matrix}$$
$$y = \frac{a}{b} \text{ if } m = n$$

Slant:

$$m < n$$

$$y = \frac{ax^n + bx^{n-1} + \dots + c}{bx^m + cx^{m-1} + \dots + d}$$

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

$$R: \{y \mid y \neq 1\}$$

State the Domain

1. $\frac{3x}{x^2-9} = \frac{3x}{(x+3)(x-3)}$



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

$D: \{x \mid x \neq -1, x \neq 3\}$
 $x \neq -1, 3$

$x^2 - 9 \neq 0$
 $x^2 \neq 9$
 $x \neq \pm 3$
 $D: \{x \mid x \neq \pm 3\}$

3. $\sqrt[3]{3x} \sqrt{14x-7}$

$x \geq \frac{1}{2}$

$14x - 7 \geq 0$

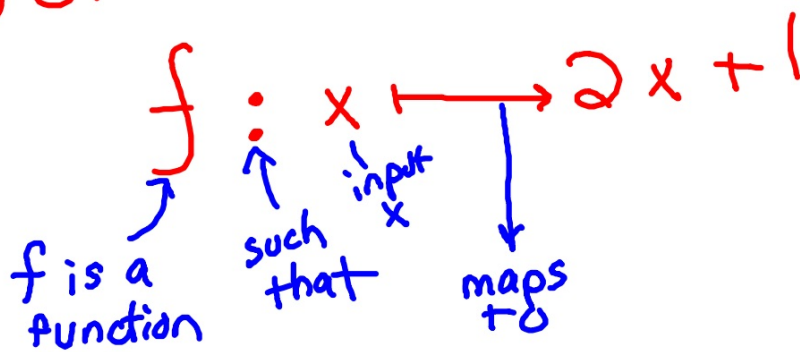
$14x \geq 7$

$x \geq \frac{7}{14}$

1.3 Function Notation

$f(x)$ is read as 'f of x' and means "the value of the function (y) at a particular x"

NOTE: IB uses the following:



~~$f(x)$~~

EVALUATE A FUNCTION

* EVALUATE DOES NOT MEAN SOLVE!

Ex 1 $f(x) = 2x + 1$ evaluate f for $x = 3$

code for "plug 3 in
wherever you see "x",
then simplify, if
you can

$$\begin{aligned} f(3) &= 2(3) + 1 \\ &= 6 + 1 \\ &= 7 \end{aligned}$$

Ex 2 $f(x) = x^2 + 4x - 3$ find a) $f(k)$
b) $f(x+1)$

$$a) f(k) = k^2 + 4k - 3$$

$$\begin{aligned} b) f(x+1) &= (x+1)^2 + 4(x+1) - 3 \\ &= (x+1)(x+1) + 4x + \underbrace{4 - 3} \\ &= x^2 + 2x + 1 + 4x + 1 \\ &= x^2 + 6x + 2 \end{aligned}$$

HW
P. 13
1E #1-8