

June 20, 2017

#8) $f(x) = \sqrt{x-4}$
 Domain: $[4, \infty)$
 $x-4 \geq 0$
 $x \geq 4$

note:
 $f(x) = \sqrt{x}$
 Domain: $[0, \infty)$
 Range: $[0, \infty)$

$f(3) = \sqrt{3-4}$
 $= \sqrt{-1}$
 $(?)^2 = -1$

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$g(x) = \frac{1}{\sqrt{x-4}}$
 D: $(4, \infty)$

* Restrictions

① $x-4 \geq 0$
 $x \geq 4$

② The denominator can not be zero.

$f(4) = \frac{1}{\sqrt{4-4}} = \frac{1}{\sqrt{0}} = \frac{1}{0}$
 und!

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#9) $f(x) = \frac{2x+7}{4x-8}$

Restrictions: Denominator \neq zero.

$4x-8=0$
 $4x=8$
 $x=2 \rightarrow D: x \neq 2$
 $(-\infty, 2) \cup (2, \infty)$

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Family of Functions

$f(x) = c$ Constant function
 $f(x) = 2$
 D: \mathbb{R}

$f(x) = x$ line
 D: \mathbb{R}

$f(x) = mx + b$ line
 D: \mathbb{R}

$f(x) = x^2$ Curve
 D: \mathbb{R}

$f(x) = x^3$ Curve
 D: \mathbb{R}

$f(x) = \sqrt{x}$ curve
 $x \geq 0$
 D: $[0, \infty)$

$f(x) = \sqrt[3]{x}$ curve
 D: \mathbb{R}

$f(x) = \frac{1}{x}$ curve
 $x \neq 0$
 D: $(-\infty, 0) \cup (0, \infty)$

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Functions

Input \rightarrow Rule \rightarrow Output

Domain (x) \rightarrow Range (y or f(x))

2	$2x+3$	7
-3		-3
-2	$\sqrt{2x}$	2
2		

D: $[0, \infty)$

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#10) $f(x) = \sqrt{4-x} - \frac{x}{x+3}$

Restrictions

① $4-x \geq 0$
 $4 \geq x$

② $x+3 = 0$
 $x = -3$

$(-\infty, -3) \cup (-3, 4]$

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