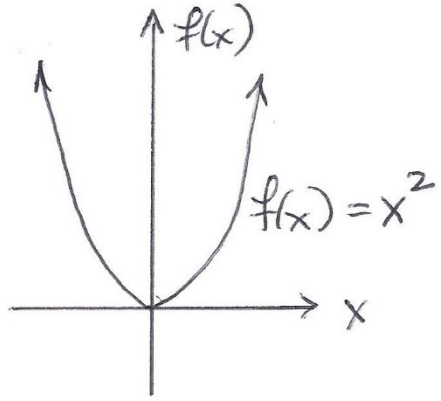
FAR BEYOND

MAT122

More Domain

Stony Brook University

More on Domain



domain: $(-\infty,\infty)$ -or- all reals -or- $\mathbb{R}$

range: $[0,\infty)$

Rule: an x value is not in a function's domain if it causes:

1. denominator to be **zero**
2. **negative** under even root

zero under radical okay (can't violate Rule #1) $\sqrt{0}=0$

ex: find domain of $f(x)=(3x-1)^2$ no denominator, no radical

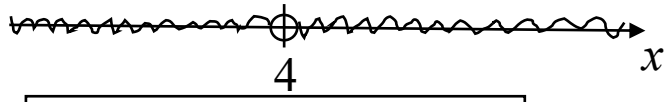
domain: $(-\infty,\infty)$

ex: find domain of $p(x)=\dfrac{x^2+3x-7}{x-4}$

$x-4\neq 0$

$x\neq 4$

use real number line to convert to interval notation

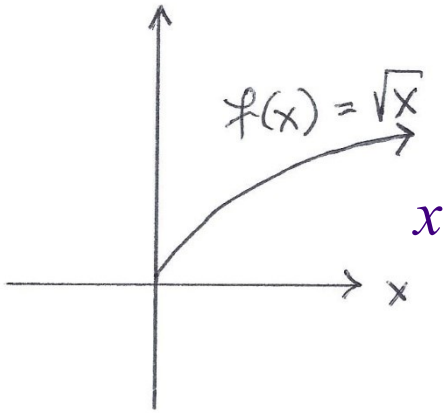


domain: $(-\infty,4)\cup(4,\infty)$

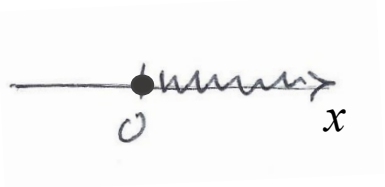
More on Domain (cont'd)

Rule: an x value is not in a function's domain if it causes:

1. denominator to be **zero**
2. **negative** under even root



$x \geq 0$

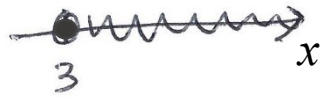


domain: $[0, \infty)$

ex: find domain $g(x) = \sqrt{x-3}$

$x - 3 \geq 0$

$x \geq 3$



domain: $[3, \infty)$

NOTE: domain $\sqrt[3]{x-3}$

$(-\infty, \infty)$

an even root has a restricted domain

an odd root a domain of all reals

$(-2)^3 = (-2)(-2)(-2) = -8 \quad \therefore \sqrt[3]{-8} = -2$