You have 100 m of fence and you are going to make a pen for you dog to run in outside, against the side of your barn.

a) Express the area function in terms of the width.

b) Determine the domain and range of the function.

c) Determine the maximum area available for your dog.

Function:

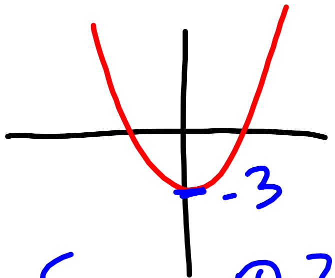
Every x has only one y

Domain:

All possible x values.

D → {5, 6, 7, 8, 9}

R → {5, 6, 7, 8, 9}

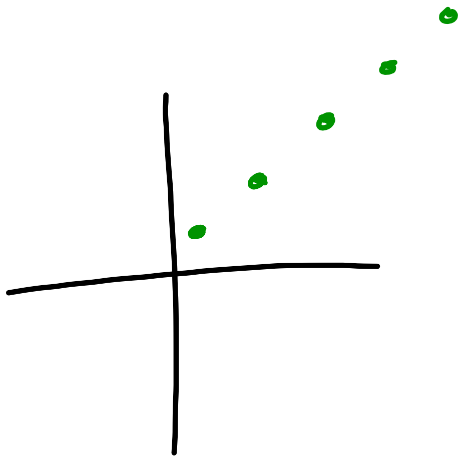


D → $\{x \in \mathbb{R}\}$

R → $\{y \in \mathbb{R} \mid y \geq -3\}$

Range:

All possible y values



Function Notation

So far we have only seen equations written as:

$y = x - 4$

$y = 3x^2 - 2x + 1$

Now we will write functions as:

$f(x) = x - 4$

$g(x) = 3x^2 - 2x + 1$

Domain:

Range:

For the following function, $f(x) = x^2 - 3x + 2$

Determine f(0), f(-2), and $f(\frac{1}{2})$

$f(x) = x^2 - 3x + 2$

$f(0) = (0)^2 - 3(0) + 2$
$= 0 - 0 + 2$
$= 2$

$f(-2)$
$= (-2)^2 - 3(-2) + 2$
$= 4 + 6 + 2$
$= 12$

$f(x) = x^2 - 3x + 2$

$f(\frac{1}{2}) = (\frac{1}{2})^2 - 3(\frac{1}{2}) + 2$
$= \frac{1}{4} - (\frac{2}{2})\frac{3}{2} + \frac{2}{1}(\frac{4}{4})$
$= \frac{1}{4} - \frac{6}{4} + \frac{8}{4}$
$= \frac{3}{4}$

-2^2

$= -4$

$(-2)^2$

$= 4$

Max and Min of Quadratics

By Completing the Square:

Determine the optimal value for the function, $f(x) = x^2 + 3x - 4$

By Partial Factoring:

Determine the optimal value for the function, $f(x) = x^2 + 3x - 4$

Seth throws a ball that will follow a parabolic arch due to gravity. The path of the ball can be modelled by the function,

a) Determine the zeros and interpret their meaning.

b) How long after it was thrown does the ball reach its max height?

c) Determine the max height of the ball.

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