

Precalculus - Functions, Domain and Range - Worksheet

Common Core F-IF.A.1, F-IF.A.2, F-IF.B.5 · maths-pdf.fr/en/

Name: _____ Class: _____ Date: ____/____/____

These 20 problems practice functions, domain and range (Common Core F-IF.A.1, F-IF.A.2 and F-IF.B.5). Start with evaluating and finding domains, then read graphs, use piecewise rules and difference quotients.

Precalculus · Common Core State Standards: **F-IF.A.1, F-IF.A.2, F-IF.B.5**

Exercise 1 - Evaluate a quadratic

Evaluate $f(3)$ for $f(x) = 2x^2 - 5x + 1$.

Exercise 2 - Evaluate a cubic

Evaluate $g(-2)$ for $g(x) = x^3 - 4x$.

Exercise 3 - Is it a function?

x	1	2	3	2
y	4	5	6	7

Input-output table.

Decide whether the table represents y as a function of x . Explain.

Exercise 4 - Domain of a line

Find the domain of $f(x) = 3x - 7$. Write it in interval notation.

Exercise 5 - Domain with a denominator

Find the domain of $h(x) = \frac{1}{x-4}$.

Exercise 6 - Domain with a root

Find the domain of $f(x) = \sqrt{2x+6}$.

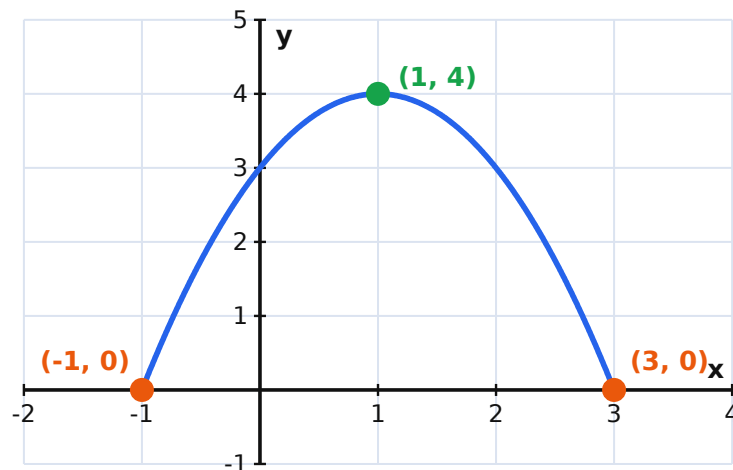
Exercise 7 - Root and denominator together

Find the domain of $f(x) = \frac{\sqrt{x+5}}{x-2}$.

Exercise 8 - Range of a shifted parabola

Find the range of $f(x) = x^2 + 3$.

Exercise 9 - Read a graph



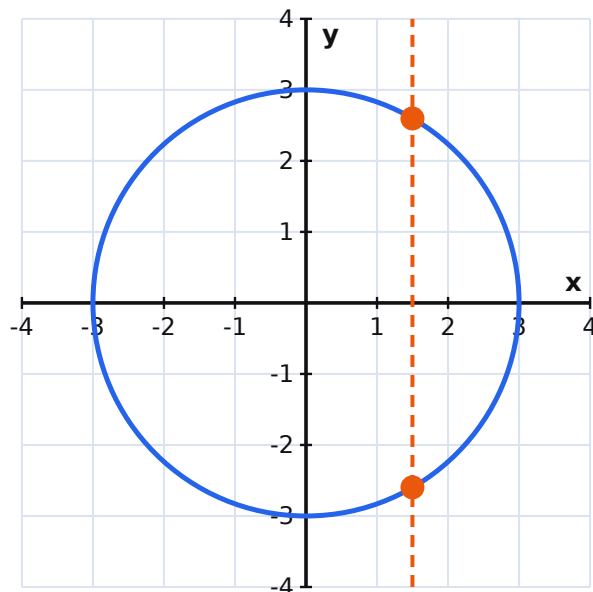
Graph of f on a closed interval.

Use the graph to find the domain, the range, and $f(2)$.

Exercise 10 - Piecewise values

Let $f(x) = x + 4$ when $x < 1$ and $f(x) = x^2$ when $x \geq 1$. Find $f(-2)$, $f(1)$ and $f(3)$.

Exercise 11 - Vertical line test



A circle and a vertical line.

Does the circle $x^2 + y^2 = 9$ represent y as a function of x ? Explain.

Exercise 12 - Domain of a model

A fence uses 40 ft of wire to enclose a rectangle of width w feet. Its area is $A(w) = w(20 - w)$. Find the realistic domain of A .

Exercise 13 - Reciprocal of a root

Find the domain of $f(x) = \frac{1}{\sqrt{x-3}}$.

Exercise 14 - Solve $f(x) = \text{value}$

For $f(x) = 4x - 1$, find x when $f(x) = 11$.

Exercise 15 - Input for a quadratic output

For $f(x) = x^2 - 2x$, find every x with $f(x) = 8$.

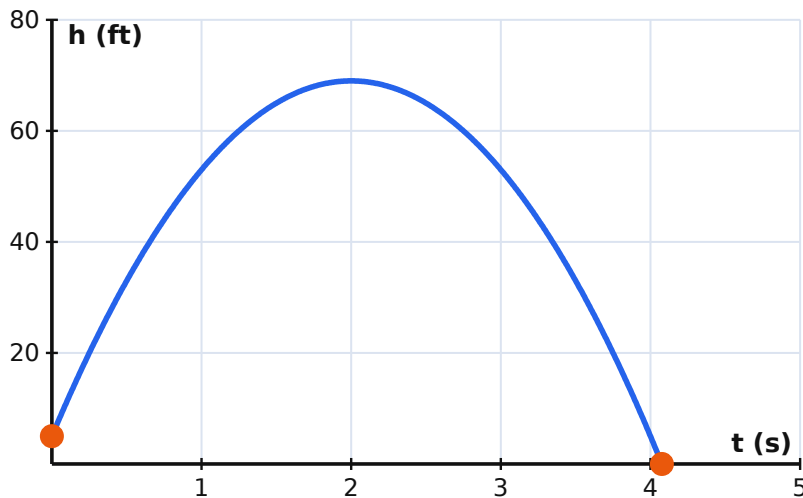
Exercise 16 - Difference quotient

For $f(x) = x^2 + 1$, simplify $\frac{f(2+h) - f(2)}{h}$ for $h \neq 0$.

Exercise 17 - Taxi fare

A taxi in Austin charges $C(m) = 4 + 2.5m$ dollars for a ride of m miles. Find the fare for a 6.4-mile ride, and find how far Priya can ride for \$34.

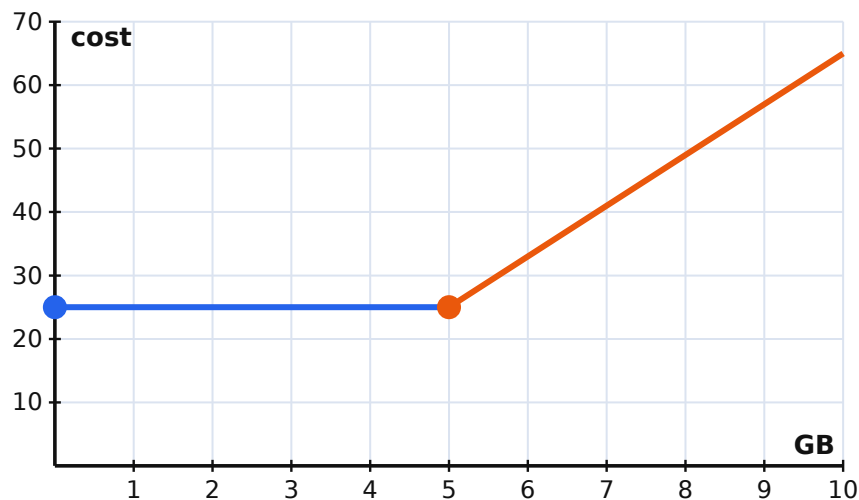
Exercise 18 - Height of a ball



Height of Diego's ball.

Diego throws a ball so its height in feet after t seconds is $h(t) = -16t^2 + 64t + 5$. Find $h(0)$, $h(1)$ and $h(2)$, then state the range of heights while the ball is in the air (the ball lands at about $t \approx 4.08$ s).

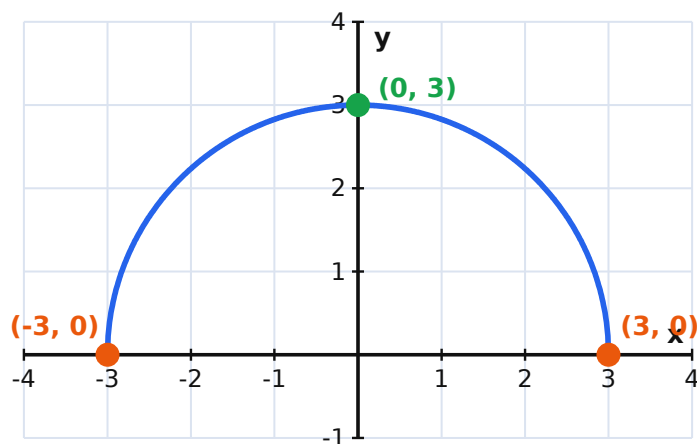
Exercise 19 - Data plan



A data plan with a flat fee.

Sofia's plan costs \$25 for up to 5 GB, plus \$8 for each GB over 5. Find the cost for 3 GB, 5 GB and 9.5 GB, and state the range of the cost function.

Exercise 20 - Semicircle function



Graph of f .

Find the domain and range of $f(x) = \sqrt{9 - x^2}$.