Advanced Math

1-3

(Day 1)

Functions and Their Graphs

function - A rule or a map that assigns each value of the domain to exactly one value of the range.

domain - set of all possible inputs, usually x

range - set of all possible outputs usually y

Determine if the equation represents y as a function of x.

13) $x^2 + y^2 = 4$

not a function

$\sqrt{y^2} = \sqrt{4-x^2}$

$|y| = \sqrt{4-x^2}$

$y = \pm\sqrt{4-x^2}$

Not a Function

15) $x^2 + y = 4$

$y = -x^2 + 4$

yes it's a function

When in doubt, Graph it out!

Evaluate the function at the specified values of the independent variable and simplify.

29) $f(y) = 3 - \sqrt{y}$

a) $f(4) = 3 - \sqrt{4}$

$= 3 - 2 = 1$

b) $f(0.25) = 3 - \sqrt{0.25}$

$3 - 0.5 = 2.5$

$\sqrt{\frac{1}{4}} = \frac{1}{2}$

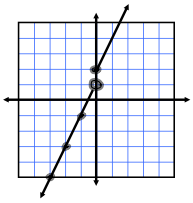
c) $f(4x^2) = 3 - \sqrt{4x^2}$

$= 3 - 2|x|$

Evaluate the function at the specified values of the independent variable and simplify.

piece-wise function

35) $f(x) = \begin{cases} 2x + 1, & x < 0 \\ 2x + 2, & x \geq 0 \end{cases}$

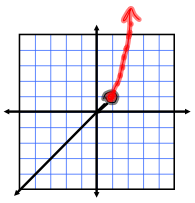


a) $f(-1) = 2(-1) + 1 = -1$

b) $f(0) = 2(0) + 2 = 2$

c) $f(2) = 2(2) + 2 = 6$

$g(x) = \begin{cases} x, & x < 1 \\ x^2, & x \geq 1 \end{cases}$



Find all real values of x such that $f(x) = 0$.

45) $f(x) = x^2 - 9$

$0 = x^2 - 9$

$9 = x^2$

$\{\pm 3\}$

Find the domain of the function.

55) $g(y) = \sqrt{y - 10}$

$y - 10 \geq 0$

$y \geq 10$

D: $[10, \infty)$

59) $g(x) = \frac{1}{x} - \frac{3}{x+2}$

D: $\mathbb{R}$ except $\{0, -2\}$

because they make a zero in the denom.

Assignment:

pg 141

14-22 even,

26 - 38 even,

42 - 62 even