


Calculus/PreCalculus Special Topics Functions, Domain, Range Name: _____

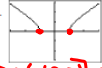
Evaluate the function at each specified value and simplify.


3. $f(x) = \begin{cases} x^2+2 & x \leq 1 \\ 2x^2+2 & x > 1 \end{cases}$ a) $f(-2)$ b) $f(1)$ c) $f(2)$

$f(-2) = (-2)^2 + 2 = 6$ $f(1) = 1^2 + 2 = 3$ $f(2) = 2(2)^2 + 2 = 10$

Find the domain and range of the function.

7.  $D: (-\infty, \infty)$
 $R: (-\infty, 0]$

9.  $D: (-\infty, -1] \cup [1, \infty)$
 $R: [0, \infty)$

16.  $D: [-5, 5]$
 $R: [-5, 5]$

Determine the domain of the function.

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

20. $h(x) = \sqrt{x-10}$ $x-10=0 \Rightarrow x=10$ $D: [10, \infty)$

24. $f(x) = \frac{\sqrt{x-1}}{x-4}$ $x-1=0 \Rightarrow x=1$
 $x-4=0 \Rightarrow x=4$ $D: [1, 4) \cup (4, \infty)$

Determine the domain and range of the function.

29. $h(x) = \sqrt{x-1}$ $x-1=0 \Rightarrow x=1$ $D: [1, \infty)$
 $R: [0, \infty)$

30. $f(x) = \sqrt{4-x^2}$ $4-x^2=0 \Rightarrow \pm 2 = x$ $D: [-2, 2]$
 $R: [0, 2]$

Select a function from $f(x) = cx$, $g(x) = cx^2$, $h(x) = c\sqrt{|x|}$, or $r(x) = \frac{c}{x}$ and determine the constant c such that the function fits the data given in the table.

32.

x	-4	-1	0	1	4
y	6	3	0	3	6

$f(x) = cx$ $6 = c(-4) \Rightarrow \frac{-3}{2} = c$ $f(x) = -\frac{3}{2}x$ No

$g(x) = cx^2$ $6 = c(-4)^2 \Rightarrow \frac{3}{8} = c$ $g(x) = \frac{3}{8}x^2$ No

$h(x) = c\sqrt{|x|}$ $6 = c\sqrt{|-4|} \Rightarrow 6 = 2c \Rightarrow 3 = c$ $h(x) = 3\sqrt{|x|}$ Yes

May 11-11:34 AM