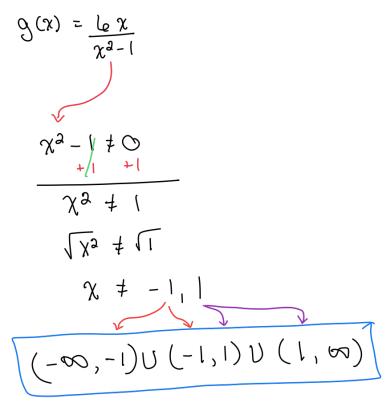
- * Relation = a correspondence between 2 sets. (x corresponds to y)
- * Domain = set of all inputs for a relation. (The 1st number in an ordered pair.)
- * Range = set of all inputs. (The 2nd number in an ordered pair.)
- * Function = every element in the domain can corresponds to only 1 element in the range. (The x's can not repeat)
- * (f + g)(x) = f(x) + g(x)
- * (f g)(x) = f(x) g(x)
- * $(f \cdot g)(x) = f(x) g(x)$
- $*\left(\frac{f}{g}\right)(x) = \frac{f(x)}{g(x)}$
- 1. Find the domain of the function. $g(x) = \frac{\sqrt{2}}{x^2 1}$



- * When finding the domain of a fraction, just look at the denominator.
- * The denominator can not equal 0.
- * Write down the denominator " \neq 0 ".
- * Then solve for x.
- * So this tells us that "x" can be any number but the these numbers.
- * Write the domain using interval notation with "U" between them.

$$F(x) = \frac{5x(x-6)}{3x^2-20x-7}$$

$$F(x) = \frac{5x(x-6)}{3x^{2}-20x-7}$$

$$3x^{2}-20x-7 + 0$$

$$7$$

$$6=3$$

$$6=-20$$

$$6=-7$$

$$\frac{-(-20) \pm \sqrt{(-20)^2 - 4(3)(-7)}}{2(3)}$$

$$\chi = -\frac{1}{3}$$

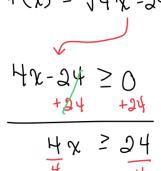
- * The denominator can not equal 0.
- * Write down the denominator " \ \ 0 ".
- * Then solve for x by using the quadratic formula.
- * So this tells us that "x" can be any number but the these numbers.

 $f(x) = \sqrt{4x-24}$

 $\chi \neq \frac{1}{3}$, $\chi \neq 7$

3. Find the domain of the function.

$$f(x) = \sqrt{4x-24}$$



$$\chi \geq 6$$

$$[(\omega,\infty)]$$

- When finding the domain of a square root, it will have to be greater than or equal to 0. (Because we can not have a negative under a square root.)
- * Write down what's under the square root sign " ≥ 0"
- * Then solve for x.
- * So this tells us that "x" will be greater than or equal to this number.
- * Write the domain using interval notation.

$$f(x) = \frac{2x}{\sqrt{x-5}}$$

$$f(x) = \frac{2x}{\sqrt{x-5}}$$

$$\sqrt{x-5} \neq 0$$

$$\frac{\chi-5>0}{45}$$

$$\frac{\chi-5>0}{\chi>5}$$

$$(5,\infty)$$

- * The denominator can not equal 0.
- * Write down the denominator " \pm 0 ".
- * Now, since we have a square root, we will write down what's under the square root sign and then " > 0"
- * So, this tells us that "x" will be greater than or equal to this number.
- * Write the domain using interval notation.

5. State the domain and range for the following relation. Then determine whether the relation represents a function,

- * Label the first number in each ordered pair "D" and the second number in each pair "R".
- * Now the domain will be each number that you labeled with a "d". (If a number repeats, only write it down once,
- * The range will be each number that is labeled with and "R". (If a number repeats, only write it down once.)
- * If a number repeats in the domain, then it is not a function.

* Not a function, because there are 2 of the same number in the domain.

The relation is not a function because there are ordered points with le as the first element and different second elements.

6. State the domain and range for the following relation. Then determine whether the relation represents a function,

$$\{(7,-3), (8,-3), (9,-3), (10,-3)\}$$
 $\{(7,-3), (8,-3), (9,-3), (10,-3)\}$
 $\{(7,-3), (8,-3), (9,-3), (10,-3)\}$

* It's a function, because No numbers repeat in the Domain.

- * Label the first number in each ordered pair "D" and the second number in each pair "R".
- * Now the domain will be each number that you labeled with a "d". (If a number repeats, only write it down once.
- * The range will be each number that is labeled with and "R". (If a number repeats, only write it down once.)
- * If a number repeats in the domain, then it is not a function.

The relation is a function because there are no ordered pairs with the same first element + different second elements.

7. For the given functions f and g, complete parts (a)-(h). For parts (a)-(d), also find the domain.

a) Find (f+9)(x)

The domain is EXIX is any real number.

b) Find (f-g)(x)

The domain is {x1x is any real number.}

(c) Find (f·g)(2)

The domain is Exlx is any real number. 3

d) Find (=)(x)

For Domain:
$$\frac{5\chi+6}{9\chi-2} \longrightarrow \frac{9\chi-2+0}{-\frac{+2}{9}} = \chi + \frac{2}{9}$$
The proposition of th

e.) Find
$$(f+g)(3)$$

 $5x+6+9x-2$
 $5(3)+6+9(3)-2$ Type into calculator
= 46

f.) Find
$$(f-g)(2)$$
 $5x+6-(9x-3)$
 $5(2)+6-(9(2)-2) \leftarrow \text{Type into calculator}$
 $= \bigcirc$

9.) Find
$$(f \cdot g)(4)$$

 $(5x^2 + b)(9x - 2)$
 $(5(4) + b)(9(4) - 2) < Type into colculator colculator = 884$

h.) Find
$$(\frac{f}{g})(1)$$

$$5x+6$$

$$9x-2$$

$$5(1)+6$$

$$9(1)-2$$

$$= \frac{11}{7}$$

of Once you write

down the problem,

replace each "?"

with the number

in ().

Then type

into collector.

8. For the given functions f and g, complete parts (a)-(h). For parts (a)-(d), also find the domain.

$$f(x) = \chi - 5$$

a) Find
$$(f+g)(x)$$

 $\chi-5+8\chi^2$

The domain is EXIX is any real number. 3

The domain is EXIX is any real number.}

The domain is Exlx is any real number. 3

d.) Find
$$\left(\frac{f}{g}\right)(x)$$

For domain:

$$\frac{8}{8}\chi_3 + \frac{8}{0}$$

$$f(x) = x-5 \qquad g(x) = 8x^2$$

e.) Find
$$(f+g)(4)$$

 $\chi-5+8\chi^2$
 $4-5+8(4)^2=127$

f.) Find
$$(f-g)(3)$$

 $\chi-5-8\chi^2$
 $3-5-8(3)^2=-74$

9.) Find
$$(f \cdot g)(a)$$

 $(x-5)(8x^2)$
 $(2-5)(8(a)^2) = -96$

h.) Find
$$(\frac{f}{g})(a)$$

$$\frac{\chi-5}{8\chi^2}$$

$$\frac{2-5}{8(a)^2} = \frac{3}{3a}$$

once you write

down the problem,

replace each """

with the number

in ().

Then type into

Calculator.