

Rational Number - is a quotient of two integers

Rational Expression is an expression written in the form  $\frac{P}{Q}$  where  $P$  and  $Q$  are both polynomials.

and  $Q \neq 0$ .

$$\frac{5}{x+2}, \quad \frac{18-2x^2}{x^2-2x-3}; \quad -7; \quad \frac{x^3+8}{2+x}$$

Ex. 1 Evaluate each rational expression for the given values.

(a)  $\frac{h+9}{h-3}; h=5$

$$\frac{5+9}{5-3} = \frac{14}{2} = 7$$

(b)  $\frac{n^2+8}{n^2+3n-10}; n=2$

$$\frac{2^2+8}{2^2+3(2)-10} = \frac{4+8}{4+6-10} = \frac{12}{0}$$

Undefined

What makes fractions undefined? when zero is in the denominator.

How to find restrictions on the variable(s):

- 1) Set the denominator equal to zero.
- 2) Solve for the variable.