

6.1 Rational Expressions

Non-Permissible Values (NPV):

Any value of a variable which makes the expression undefined -when the denominator = 0
for rational expressions.

A restriction is what the variable cannot equal.

Example: Determine the NPV and Restrictions

a.) $\frac{3y}{4xz^2}$

b.) $\frac{5x}{8x^2-12}$

c.) $\frac{5}{x^2-5x-6}$

d.) $\frac{x}{x^2+1}$

Simplifying Rational Expressions:

You can multiply or divide an expression by 1 and not change the value: this is called an equivalent expression¹

- a.) Factor first
- b.) State restrictions
- c.) Reduce

Example 2: Simplify:

a.)

$$\frac{4x + 8}{2x^2 - x - 10}$$

b.)

$$\frac{12x - 24}{4 - x^2}$$

c.)

$$\frac{81x^2 - 16y^2}{18x - 8y}$$