**Algebra 2 7.4 – Radical Exponents**

Expressing rational expressions in Radical Form and Exponential Form

Radical Form Exponential Form

**Rational Exponents** If is a real number and is an integer

Examples:

**Converting to and from Radical Form**

Write each expression in radical form.

Write each expression in exponential form

Application: The time *t* in hours needed to cook a turkey that weighs *p* pounds can be approximated by the equation:

To the nearest hundredth of an hour, how long would it take to cook a turkey that weights 13 lbs?

**Algebra 2 7.5 – Solving Radical Equations**

Radical equation – an equation that has a variable in the radicand or a variable with a rational exponent.

Examples:

radical equation radical equation NOT a radical equation

Steps for Solving Radical Equations

1. Isolate the radical
2. Eliminate the radical
3. Solve the radical-free equation
4. Check for extraneous solutions

Example: Solve: = check

= =

= =

= =

= =

=

Example: Solve: = check

= =

=

=

=

Application: A spherical water tank holds 10000 ft3 of water. Find the diameter of the tank.

Use:

=

=

=

=

=

=

**Checking for extraneous solutions**

Example: Solve: =

=

=

=

=

=

=

=

= =

= = =

Check:

= =

= =

= =

= =

= This is not a solution

It is called an *extraneous*

**Algebra 2 7.6 – Function Operations**

**Function Operations**

Addition

Subtraction

Multiplication

Division ,

Example: Let and

Find:

Find:

Example: Let and

Find:

Find:

Example: Let and

Find:

Find:

Example: Let and

Find:

Find:

**Composition of Functions**

1. Evaluate the inner function first.

2. Then use your answer as the input of the outer function .

Example: Let and

Find:

Find:

Example: Let and

Find:

Find:

Find:

Example: Let and

Find:

Find:

Example: Let and

Find:

Find:

**Algebra 2 7.7 – Inverse Relations and Functions**

An INVERSE RELATION (or FUNCTION) “undoes” the original relation.

We will use the symbol to represent the inverse of .

We can find the inverse by switching the coordinates.

Relation Inverse of the Relation

|  |  |
| --- | --- |
| *x* | *y* |
| -3 | 5 |
| 2 | 0 |
| 1 | 3 |

|  |  |
| --- | --- |
| *x* | *y* |
|  |  |
|  |  |
|  |  |

Finding the inverse of an equation:

Find the inverse of

Find the inverse of

Domain Domain = Range of

Range Range = Domain of

Composition of Inverse Functions

and

Example: Show that the given functions are inverses of each other.

Example:

a. Find the domain and range of

Domain:

Range:

b. Find the inverse of

c. Find the domain and range of

Domain:

Range:

**Algebra 2 7.8 – Graphing Radical Functions**

Translating square root functions vertically (*k*)

Graph:

Translating square root functions horizontally (*h*)

Graph:

Graphing square root functions (*a*)

Graph:

Example:

Graph:

(*a* = 3) (left 2 and down 1)

Example:

Graph:

Example:

Graph:

Translating cube root functions vertically (*k*)

Graph:

Translating cube root functions horizontally (*h*)

Graph:

Graphing cube root functions (*a*)

Graph:

Example:

Graph:

(*a* = 2) (right 1 and up 3)

Example:

Graph: :

Example:

Graph: