Math 48B, Lesson 17: Exponential and Logarithmic Equations

In Math 48B Lessons 14, 15, 16, 17, and 18, we study logarithmic functions:

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| --- | --- |
| Logarithmic Form | Exponential Form |
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To begin our exploration, let’s recall the rules of powers/exponents.

1. WHAT ARE RULES OF POWERS/EXPONENTS?

Exponent Notation:

Product Rule:

Quotient Rule:

Power to a Power:

Zero Power:

Negative Powers:

2. WHAT ARE RULES OF LOGARITHMS?

Logarithmic Notation: and

Product Rule:

Quotient Rule:

Power to a Power:

Inverse Exponential:

Inverse Log:

Change of Base:

3. HOW TO USE LOG RULES?

Use the properties of logs we explored in problem 2 above to evaluate the logarithm in each problem:

3A. 3C.

3B. 3D.

4. HOW TO SOLVE EXPONENTIAL EQUATIONS?

Solve the algebraic exponential equation:

4A. Use the inverse operation known as “equating exponent” to solve algebraically

4B. Use the inverse operation known as logarithms to solve algebraically

4C. Use a graphical technique to solve this algebraic equation

5. HOW TO SOLVE EXPONENTIAL EQUATIONS?

Solve each of the algebraic equations below.

5A. 5E.

5B. 5F.

5C. 5F.

5D