**Zero and Negative Exponents**

We’ve seen expressions with positive exponents, but what about having a zero or negative exponent?

Fill in the table below and look for a pattern to help you find .

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The **Zero Exponent Property** states that any nonzero base raised to the zero power

is equal to \_\_\_\_\_\_\_.

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| **Zero Exponent Property** |
| For any nonzero number *a* |

Look at each expression and determine how to simplify the expression using the Zero Exponent Property.

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| But why isn’t equal to 1? |

Look carefully at what is being raised to the zero power. Without parentheses, the zero power only applies to base *b* so only is equal to 1. Therefore the expression simplifies to .

Simplify each expression.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Get your answers checked before moving on\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Recall the table previously used to find the value of . Now let’s extend that table to look at negative exponents. Using the pattern of dividing, complete each table. Express your answers as fractions when necessary.

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| Expression | Value |
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Did you notice a pattern for the negative exponents?

The **Negative Exponent Property** states that any nonzero base raised to a negative power can be written as one over the base to the opposite power.

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| **Negative Exponent Property** |
| For all numbers *a* and *n* where , |

Simplify each expression using positive exponents.