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| **EXPONENT RULES** | |
| 1. **Multiplication Rule:**  **(am)(an) = am+n** e.g. (-x2)(2x3) =  2. **Power of a Product Rule:**  **(ab)m = am bm** e.g. (-3xy)3 =  3. **Power of a Power Rule:**  **(am)n = am n**  e.g. (2x2y3) =  4. **Division Rule:**  e.g.  5. **Quotient Rule:**  e.g. = | 6. **Zero Exponent**  A power with an exponent of zero is equal to . . .  b0 = 1 e.g. 90 =    7. **Negative Exponent**  When you are evaluating a power with a negative exponent, you . . .  **Case 1. b-x =**  e.g. 3-1 e.g. 3-2  **Case 2.**  e.g. =  e.g.= |

**Practice:**

1. 2. 3.

4. 5.

**Task 1: Graphing the Exponential Relation**

For each equation:

a. Fill in the table of values.

b. Draw the graph and determine the key features of each graph as indicated below the grids.

c. Check your graphs using **DESMOS.**

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| |  |  | | --- | --- | | ***x*** | ***y*** | | -3 |  | | -2 |  | | -1 |  | | 0 |  | | 1 |  | | 2 |  | | 3 |  | | |  |  | | --- | --- | | ***x*** | ***y*** | | -3 |  | | -2 |  | | -1 |  | | 0 |  | | 1 |  | | 2 |  | | 3 |  | | |  |  | | --- | --- | | ***x*** | ***y*** | | -3 |  | | -2 |  | | -1 |  | | 0 |  | | 1 |  | | 2 |  | | 3 |  | |
|  |  |  |
| y-intercept = \_\_\_\_\_\_\_\_\_\_  x-intercept = \_\_\_\_\_\_\_\_\_\_  vertex = \_\_\_\_\_\_\_\_\_\_  axis of symmetry: \_\_\_\_\_\_\_\_\_\_ | y-intercept = \_\_\_\_\_\_\_\_\_\_  x-intercept = \_\_\_\_\_\_\_\_\_\_  increasing or decreasing? | y-intercept = \_\_\_\_\_\_\_\_\_\_  x-intercept = \_\_\_\_\_\_\_\_\_\_  increasing or decreasing? |

**Practice**

17. Match the power in the first row with the equivalent power in the second row, and the answer in the third row. Join them all with a line. The first one has been done for you.

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18. Walker states that. Paige states that. They are both correct. Explain why.

1. Please evaluate. DO NOT use decimals. Your answer should be an integer or a fraction.
   1.  b. 

c.  d.  e. 

f.  g.  h. 

i.  j.  k. 

1. Determine the value of the ‘?’.
   1.  b.  c. 

d.  e.  f. 

1. A power has a negative exponent. The answer is . What could the question have been? State THREE possibilities.