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| **INVESTIGATION: Type**  1. On the same set of axes, sketch the graphs of |
| 0  1  4  9      2. If is transformed to , where *a* is a number, describe the transformation:   1. If |a| > 1, then the parent function is \_\_\_\_\_\_\_\_\_\_ **vertically** by a factor of “|**a|”.** 2. If 0 < |a| < 1, then it is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**vertically** \_\_\_\_\_\_\_\_\_\_\_\_\_\_   **Any point (x, y) under this transformation becomes ( , )** |
| **INVESTIGATION: Type**  1. On the same set of axes, sketch the graphs of |
| 0  0.5  2  4.5  0  2  8  18    4. If is transformed to, where *k* is a number, describe the transformation:   1. If |k| > 1, then the parent function is \_\_\_\_\_\_\_\_\_\_\_\_\_ **horizontally** by factor of “**”**. 2. If 0 < |k| < 1, then it is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   **Any point (x, y) under this transformation becomes ( , ).** |

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| **INVESTIGATION: Type**  1. On the same set of axes, sketch the graphs of | |
| |  |  |  | | --- | --- | --- | | **x** | **-|x|** |  | | **-3** |  | | **-2** |  | | **-1** |  | | **0** |  | | **1** |  | | **2** |  | | **3** |  | | b.   |  |  |  | | --- | --- | --- | | **x** |  |  | | **0** |  | | **1** |  | | **4** |  | | **9** |  | |  |  | |  |  | |  |  | |
| 2. If is transformed to , where *a* is a negative number, describe the transformation: I noticed that the graph is reflected about the “\_\_” axis.  **Any point (x, y) under this transformation becomes ( , ).** | |

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| **INVESTIGATION: Type** 3. On the same set of axes, sketch the graphs of | |
| a.   |  |  |  | | --- | --- | --- | | **x** | **(-x)2** |  | | **-2** |  | | **-1** |  | | **0** |  | | **1** |  | | **2** |  | |  |  | |  |  | | b.   |  |  |  | | --- | --- | --- | | **x** |  |  | | **-9** |  | | **-4** |  | | **-1** |  | | **0** |  | |  |  | |  |  | |  |  | |
| 4. If is transformed to , describe the transformation:  a) If k = -1, then the graph is **reflected** about the “\_\_” axis.  **Any point (x, y) under this transformation becomes ( , ).** | |

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| Vertical stretches of *f* (x) |
|  |
| Horizontal Stretches of *f* (x) |
|  |

Let.

What do the following transformations represent in terms of stretches, reflections, and shifts?

|  |  |  |
| --- | --- | --- |
| a. | d. |  |
| b. 3 | e. |  |
| c. | f. |  |

Verify your answers using DESMOS or graphing calculator.