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| **Investigating Transformations of Non-Linear Graphs** |
| Use Desmos Graphing Calculator with a -axis scale that goes from to and an -axis scale in degrees that goes from to . |
| **Task 1** |
| Plot the following graphs on the same axes.  (a) (b) (c)  Print a picture of these graphs and stick it in your book. Describe how the graphs differ from each other.  Take the point on the graph of . Where does this point map to on the graphs of and ? Can you describe how the coordinates of this point change in general terms? |
| **Task 2** |
| Plot the following graphs on the same axes.  (a) (b) (c)  Print a picture of these graphs and stick it in your book. Describe how the graphs differ from each other and how they are similar.  Take the point on the graph of . Where does this point map to on the graphs of and . Can you describe how the coordinates of this point change in general terms? |
| **Task 3** |
| Plot the following graphs on the same axes.  (a) (b) (c)  Print a picture of these graphs and stick it in your book. Describe how the graphs differ from each other.  Take the point on the graph of . Where does this point map to on the graphs of and ? Can you describe how the coordinates of this point change in general terms? |
| **Task 4** |
| Plot the following graphs on the same axes.  (a) (b) (c)  Print a picture of these graphs and stick it in your book. Describe how the graphs differ from each other.  Take the point on the graph of . Where does this point map to on the graphs of and ? Can you describe how the coordinates of this point change in general terms? |

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| **Investigating Transformations of Non-Linear Graphs** |
| Change your scale so it now has -axis scale that goes from to and an -axis scale that goes from to . |
| **Task 5** |
| Plot the following graphs on the same axes.  (a) (b)  Print a picture of these graphs and stick it in your book. Describe how the graphs differ from each other.  Take the point on the graph of . Where does this point map to on the graph of ? Can you describe how the coordinates of this point change in general terms? |
| **Task 6** |
| Plot the following graphs on the same axes.  (a) (b)  Print a picture of these graphs and stick it in your book. Describe how the graphs differ from each other.  Take the point on the graph of . Where does this point map to on the graph of ? Can you describe how the coordinates of this point change in general terms? |
| **Challenge** |
| Using what you have learned, **sketch** the following graphs, then use Desmos to check your answers. You will need to go back to the original scale for this challenge.  (a) (b) (c)  (d) (e) (f)  (g) (h) |