***Summary: Transformations of Quadratic, Reciprocal and Root Functions and Using the Mapping Rule***

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| **Parent Function** | **Transformed Function** | **Characteristics** | |
|  |  | Domain:  Range: , if is positive  , if is negative | |
|  |  | Domain:  Range:  Vertical Asymptote:  Horizontal Asymptote: | |
|  |  | Domain: , if  Range: , if  Domain: , if  Range: , if | |
| **Mapping Rule** | | | |
| **Parent Functions** | **Transformed Function - Characteristics** | | **Graph** |
| |  |  | | --- | --- | |  |  | | 0.5 | 2 | | 1 | 1 | | 2 | 0.5 | | -0.5 | -2 | | -1 | -1 | | -2 | -0.5 | | * Vertical stretch factor of 2 * Horizontal shift 4 right * Vertical shift 3 up | |  |
| **Parent Functions** | **Transformed Function – Characteristics** | | **Graph** |
| |  |  | | --- | --- | |  |  | | 0 | 0 | | 1 | 1 | | 4 | 2 | | 9 | 3 |   Hard to graph fractions so best use whole numbers | Rewrite:   * is negative so graph will face to the left & c=-2 so domain will have every x value less than and equal to -2 * is positive and so the range will have every y-value greater than and equal to 0 * Vertical compression factor of * Horizontal shift 2 left * Reflection y- axis and horizontal compression factor () | |  |

1. Describe the transformations (ii) Determine the values of each parameter, domain and range, mapping rule
2. Graph each function.

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| **Parent Functions** | **Transformed Function – Characteristics** | **Graph** |
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