**Graphs of Related Functions**

 Reflection in y axis

 Reflection in x axis

 ← 3

 → 3

 ↑ 3

 ↓ 3

 Stretch vertical scale factor 3

 Stretch horizontal scale factor **Graphs of Related Sin Functions**

 Reflection in y axis

 Reflection in x axis

 ← 45°

 → 45°

 ↑ 2

 ↓ 2

 Stretch vertical scale factor 3

 Stretch horizontal scale factor 

**Graphs of Related Functions**

Original Equation =

|  |  |  |
| --- | --- | --- |
|  | Vertical | Horizontal |
| Translation  in +ve direction |  |  |
| Translation  in –ve direction |  |  |
| Stretch  to make larger |  |  |
| Stretch  to make smaller  (i.e. squash) |  |  |
| Reflection |  |  |

**Graphs of Related Sin Functions**

Original Equation =

|  |  |  |
| --- | --- | --- |
|  | Vertical | Horizontal |
| Translation  in +ve direction |  |  |
| Translation  in –ve direction |  |  |
| Stretch  to make larger |  |  |
| Stretch  to make smaller  (i.e. squash) |  |  |
| Reflection |  |  |

Describe the geometrical transformation that maps the curve with equation onto the curve with equation .

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