

## Transformations to Parent Graphs

Function

Parent Function is \_\_\_\_\_

Identify the parameters:

a =

b =

h =

k =

### Identify transformations:

\_\_\_\_\_ Flips over x-axis      Stretches / Shrinks vertically by a factor of \_\_\_\_\_

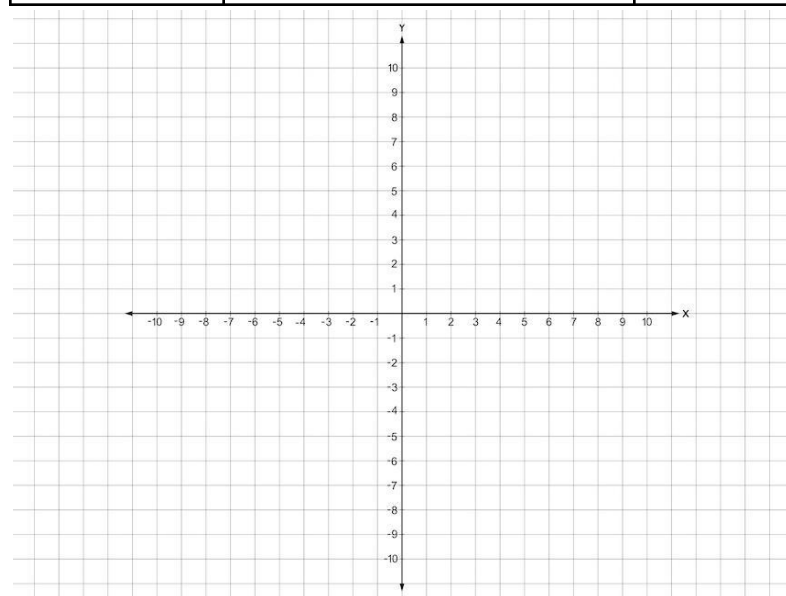
\_\_\_\_\_ Flips over y-axis      Stretches / Shrinks horizontally by a factor of \_\_\_\_\_

Moves right / left \_\_\_\_\_ units      Moves up / down \_\_\_\_\_ units

**Create mapping rules**  $x_{new} = \frac{1}{b}x + h$ ,  $y_{new} = ay + k$  write your rules in top row of table

**Fill in table:**

| Parent Function Points |  |  | Points to Graph |
|------------------------|--|--|-----------------|
| (      ,      )        |  |  | (      ,      ) |
| (      ,      )        |  |  | (      ,      ) |
| (      ,      )        |  |  | (      ,      ) |
| (      ,      )        |  |  | (      ,      ) |
| (      ,      )        |  |  | (      ,      ) |



## Transformations to Parent Graphs

Function

Parent Function is  $f(x) = x^2$

$$g(x) = -2(3(x - 4))^2 - 5$$

Identify the parameters:

$a = -2$

$b = 3$

$h = 4$

$k = -5$

**Identify transformations:**

\_\_\_✓\_\_\_ Flips over x-axis Stretches / Shrinks vertically by a factor of 2

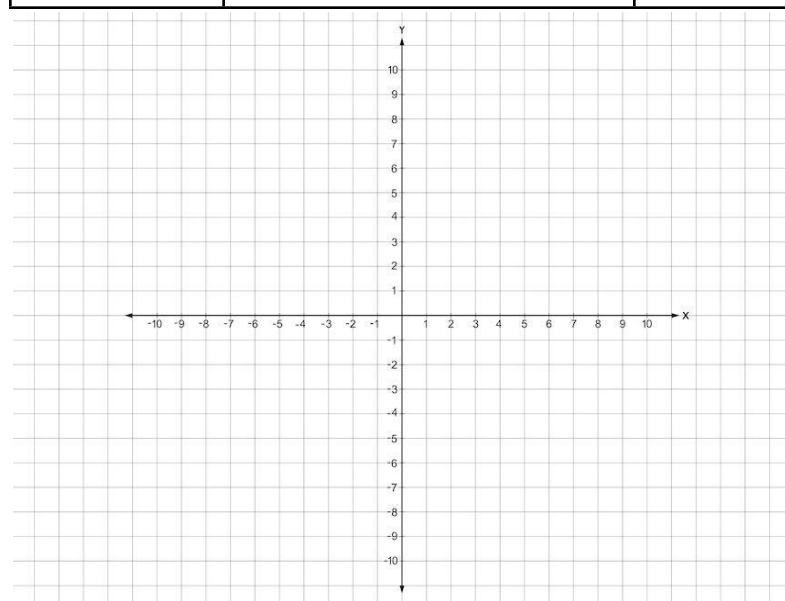
\_\_\_ Flips over y-axis Stretches / Shrinks horizontally by a factor of  $\frac{1}{3}$

Moves right / left 4 units Moves up / down 5 units

**Create mapping rules**  $x_{new} = \frac{1}{b}x + h$ ,  $y_{new} = ay + k$  write your rules in top row of table

**Fill in table:**

| Parent Function Points | $\frac{1}{3}x + 4$                        | $-2y - 5$              | Points to Graph          |
|------------------------|-------------------------------------------|------------------------|--------------------------|
| ( -2 , 4 )             | $\frac{1}{3} \cdot -2 + 4 = 3\frac{1}{3}$ | $-2 \cdot 4 - 5 = -13$ | ( $3\frac{1}{3}$ , -13 ) |
| ( -1 , 1 )             | $\frac{1}{3} \cdot -1 + 4 = 3\frac{2}{3}$ | $-2 \cdot 1 - 5 = -7$  | ( $3\frac{2}{3}$ , -7 )  |
| ( 0 , 0 )              | 4                                         | -5                     | ( 4 , -5 )               |
| ( 1 , 1 )              | $\frac{1}{3} \cdot 1 + 4 = 4\frac{1}{3}$  | -7                     | ( $4\frac{1}{3}$ , -7 )  |
| ( 2 , 4 )              | $\frac{1}{3} \cdot 2 + 4 = 4\frac{2}{3}$  | -13                    | ( $4\frac{2}{3}$ , -13 ) |



## Transformations to Parent Graphs

Function

Parent Function is  $f(x) = |x|$

$$g(x) = 4|x + 2| + 3$$

Identify the parameters:

$$a = 4$$

$$b = 1$$

$$h = -2$$

$$k = 3$$

Identify transformations:

\_\_\_\_\_ Flips over x-axis    Stretches / Shrinks vertically by a factor of 4

\_\_\_\_\_ Flips over y-axis    Stretches / Shrinks horizontally by a factor of   

Moves right / left 2 units    Moves up / down 3 units

**Create mapping rules**  $x_{new} = \frac{1}{b}x + h$ ,  $y_{new} = ay + k$  write your rules in top row of table

Fill in table:

| Parent Function Points | $x - 2$       | $4y + 3$             | Points to Graph |
|------------------------|---------------|----------------------|-----------------|
| ( -2 , 2 )             | $-2 - 2 = -4$ | $4 \cdot 2 + 3 = 11$ | ( -4, 11 )      |
| ( -1 , 1 )             | $-1 - 2 = -3$ | $4 \cdot 1 + 3 = 7$  | ( -3 , 7 )      |
| ( 0 , 0 )              | -2            | 3                    | ( -2 , 3 )      |
| ( 1 , 1 )              | $1 - 2 = -1$  | 7                    | ( -1 , 7 )      |
| ( 2 , 2 )              | $2 - 2 = 0$   | 11                   | ( 0 , 11 )      |

