

## Name in English

# Graph Logarithmic Functions

For the following functions identify the translations.

1.  $f(x) = 6 \log_{\frac{1}{8}}(x + 2)$

### Horizontal translation

- a) 2 units to right.
- b) 2 units to left.
- c) No horizontal translation.

### Vertical translation

- a) 6 units up
- b) 6 units down
- c) No vertical translation

### Shape

- a) Graph is stretched vertically by 6 units.
- b) Graph is compressed vertically by 6 units.
- c) Neither stretched nor compressed.

### Orientation

- a) The graph is reflected across the x-axis.
- b) No reflection.

2.  $f(x) = -8 \log_3(x - 4)$

### Horizontal translation

- a) 4 units to right.
- b) 4 units to left.
- c) No horizontal translation.

### Vertical translation

- a) 4 units up
- b) 4 units down
- c) No vertical translation

### Shape

- a) Graph is stretched vertically by 8 units.
- b) Graph is compressed vertically by 8 units.
- c) Neither stretched nor compressed.

### Orientation

- a) The graph is reflected across the x-axis.
- b) No reflection.

3.  $f(x) = \log_5(x - 4) - 5$

**Horizontal translation**

- a) 4 units to right.
- b) 4 units to left.
- c) No horizontal translation.

**Shape**

- a) Graph is stretched vertically by 5 units.
- b) Graph is compressed vertically by 5 units.
- c) Neither stretched nor compressed.

**Vertical translation**

- a) 5 units up
- b) 5 units down
- c) No vertical translation

**Orientation**

- a) The graph is reflected across the x-axis.
- b) No reflection.

4.  $f(x) = -\frac{1}{4}\log_8(x + 3) + 4$

**Horizontal translation**

- a) 3 units to right.
- b) 3 units to left.
- c) No horizontal translation.

**Shape**

- a) Graph is stretched vertically by  $\frac{1}{4}$  units.
- b) Graph is compressed vertically by  $\frac{1}{4}$  units.
- c) Neither stretched nor compressed.

**Vertical translation**

- a) 4 units up
- b) 4 units down
- c) No vertical translation

**Orientation**

- a) The graph is reflected across the x-axis.
- b) No reflection.