Name: _____ Date: _____

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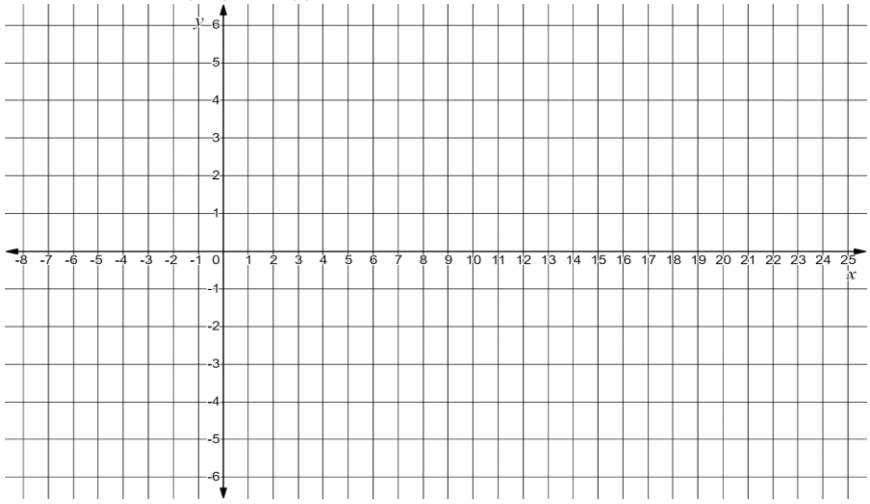
|---|---|
| **Learning Goal 7.1** | Applying one or more transformations to exponential and logarithmic functions, including translations, stretches and reflections. |

1. Graph the following functions on the grids below, then complete the table.

a. $y = \log_2(2(x+3))$



Domain

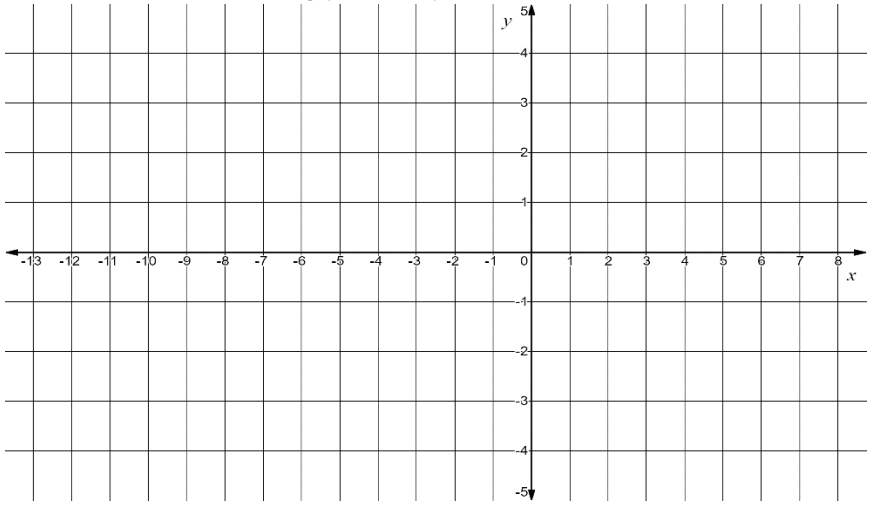
Range

$x-$ intercept

$y-$ intercept

Asymptote

b. $y = 2\log_3(-x+1)$



Domain

Range

$x-$ intercept

$y-$ intercept

Asymptote

2. In $1935$, American seismologist Charles R. Richter developed a scale formula for measuring the magnitude of earthquakes. The Richter magnitude *M* of an earthquake is defined as

$$M = log\frac{A}{A_0},$$

where $A$ is the amplitude of the ground motion, usually in microns, measured by a sensitive seismometer and $A_0$ is the amplitude, corrected for the distance to the actual earthquake that would be expected for a "standard" earthquake.

a) In $1946$, an earthquake struck Vancouver Island off the coast of British Columbia. It had an amplitude that was $10^{7.3}$ times $A_0$ . What was the earthquake's magnitude on the Richter scale?

b) The strongest recorded earthquake in Canada struck Haida Gwaii, off the coast of British Columbia, in $1949$. It had a Richter reading of $8.1$. How many times as great as $A_0$ was its amplitude?

c) Compare the seismic shaking of the $1949$ Haida Gwaii earthquake with that of the earthquake that struck Vancouver Island in $1946$.