Solution – Graphing Exercise on Page 14 of Unit 1

Given $f(x)=\log_2 x$, sketch the graph of $g(x)=3f(-2(x+1))-4$.

Equation of g

$g(x)=3\log_2(-2(x+1))-4$

Transformations of f expressed in Words

Horizontal

1. Compression by a factor of $-\frac{1}{2}$.

   (Compress by a factor of $\frac{1}{2}$, reflect in *y*-axis.)
2. Translate 1 unit to the left.

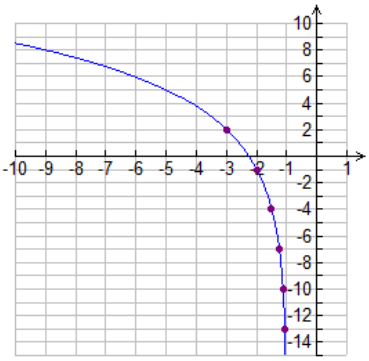
Vertical

1. Stretch by a factor of 3.
2. Translate 4 units down.

Transformations in Mapping

Notation $(x,y)\to\left(-\frac{1}{2}x-1,3y-4\right)$

Pre-image	*Image*
$(1,0)$	$\left(-\frac{3}{2},-4\right)$
$(2,1)$	$(-2,-1)$
$\left(\frac{1}{2},-1\right)$	$\left(-\frac{5}{4},-7\right)$
$\left(\frac{1}{4},-2\right)$	$\left(-\frac{9}{8},-10\right)$
$\left(\frac{1}{8},-3\right)$	$\left(-\frac{17}{16},-13\right)$
$(4,2)$	$(-3,2)$



Magnified View of Graph