Secondary III 9-4 HW

Name: Selected Answers

Graphs of Logarithms

3. For each of the six functions, describe how its graph is a transformation of the graph of $f(x)=\log_2(x)$.

**a.** $g(x) = \log_2(x) - 5$ Shift Down 5

**b.** $g(x) = 4\log_2 x$ V. Stretch by 4

**c.** $g(x) = \log_2(x+6)$ Shift Left 6

**d.** $g(x) = -\frac{3}{4}\log_2 x$

**e.** $g(x) = \log_2 x + 7$

**f.** $g(x) = \log_2(x-8)$

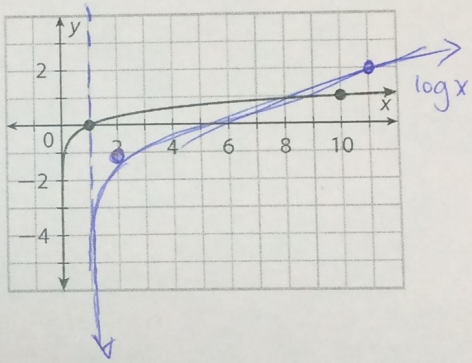
**Identify the transformations of the graph of $f(x) = \log_b x$ that produce the graph of the given function $g(x)$. Then graph $g(x)$ on the same coordinate plane as the graph of $f(x)$ by applying the transformations to the asymptote $x = 0$ and to the reference points $(1, 0)$ and $(b, 1)$. Also state the domain and range of $g(x)$ using set notation.**

**5.** $g(x) = 3\log(x-1) - 1$

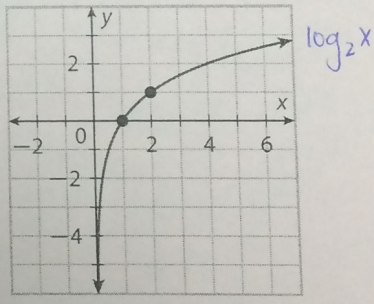
Transformations:
- V. Stretch by 3
- Shift Right 1
- Shift Down 1

Domain: $(1, \infty)$

Range: $(-\infty, \infty)$

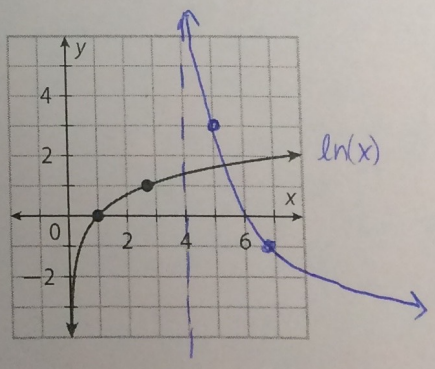



**6.** $f(x) = \frac{1}{2}\log_2(x-1) - 2$




**7.** $g(x) = -4\ln(x-4) + 3$

Transformations:
- V. Flip
- V. Stretch by 4
- Shift Right 4
- Shift Up 3



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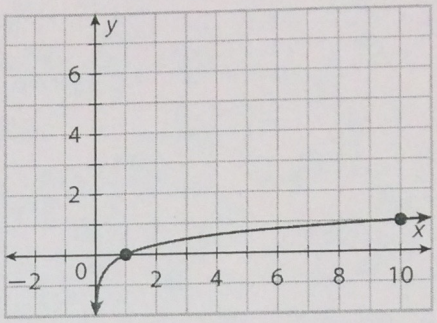
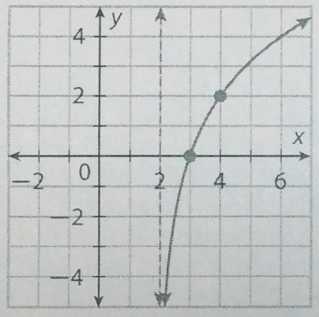
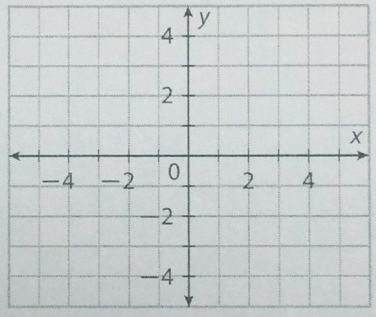
**8.** $g(x) = -2\log(x + 2) + 5$




Hint:

**12. Explain the Error** A student drew the graph of $g(x) = 2\log_{\frac{1}{2}}(x - 2)$ as shown. Explain the error that the student made, and draw the correct graph.




Review

1. If Jim invests $3500 at 5% interest rate compounded quarterly, how much money will he have after 10 years?

2. Maria invests $1250 at a 5.4% interest rate compounded continuously, how much money will she have after 6 years?