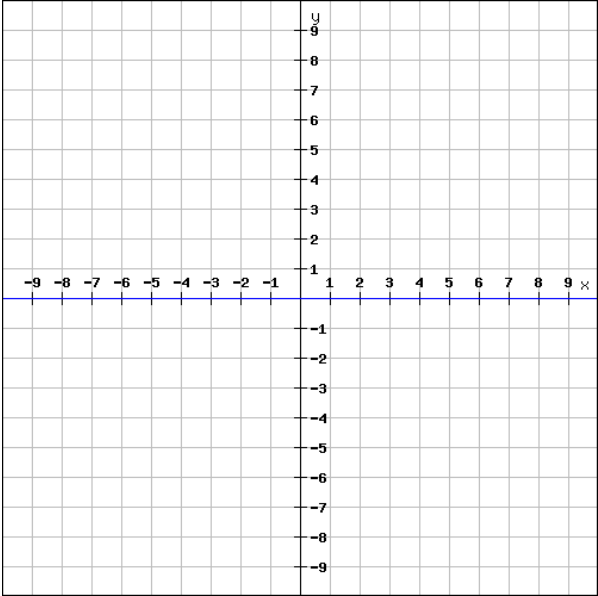
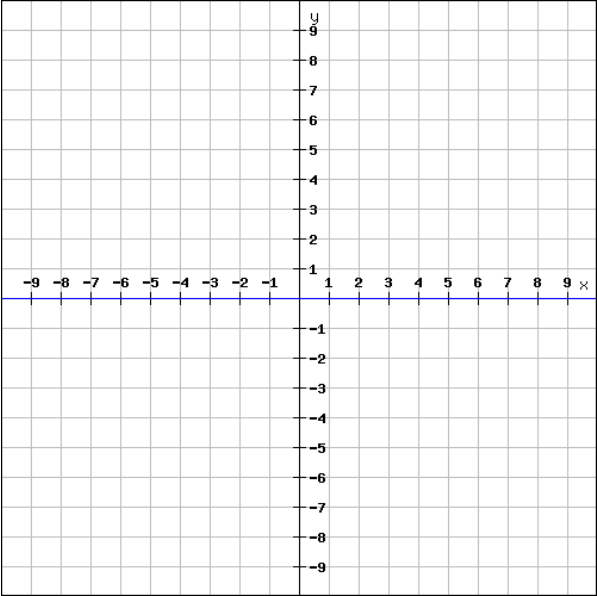
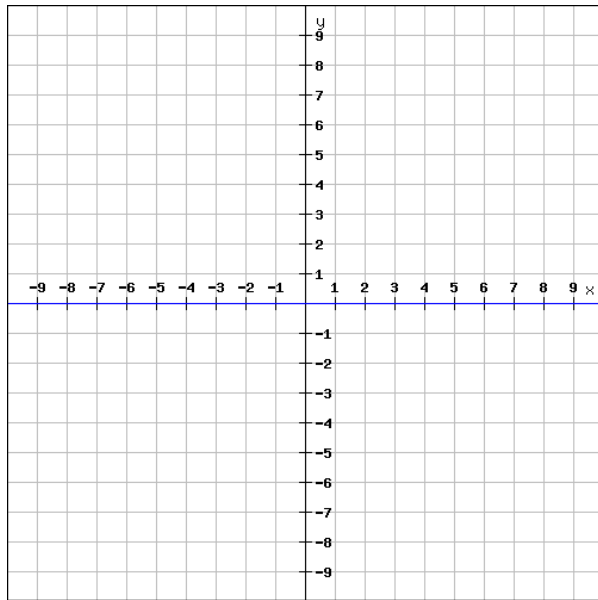


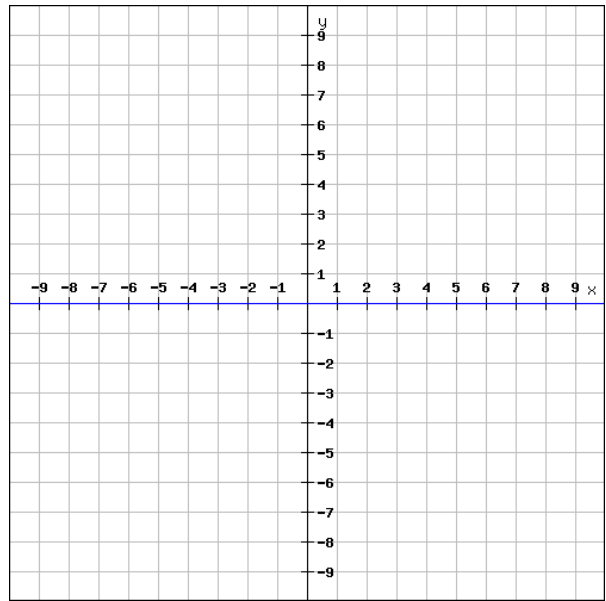
### 8.2 Transformations of Logarithmic Functions

<p><b>A Transformations of Logarithmic Functions</b></p> <p>The function:</p> $g(x) = A \log_b B(x - C) + D$ <p>is a transformation of the parent function <math>f(x) = \log_b x</math>.</p>	<p>Here are some features of the function <math>g(x)</math>:</p> <p>Domain:</p> <ul style="list-style-type: none"> <li>▪ If <math>B &gt; 0</math> then <math>D = (C, \infty)</math></li> <li>▪ If <math>B &lt; 0</math> then <math>D = (-\infty, C)</math></li> </ul> <p>Range: <math>R</math></p> <p>Vertical Asymptote: <math>x = C</math></p>
<p>Ex 1. For each case, use three key points to graph the logarithmic function. Specify the x-intercept, y-intercept, domain, range, and the equation of the vertical asymptote.</p> <p>a) <math>y = -\log_2(x - 3)</math></p> 	<p>b) <math>y = 2 \log_{0.5} x - 4</math></p> 

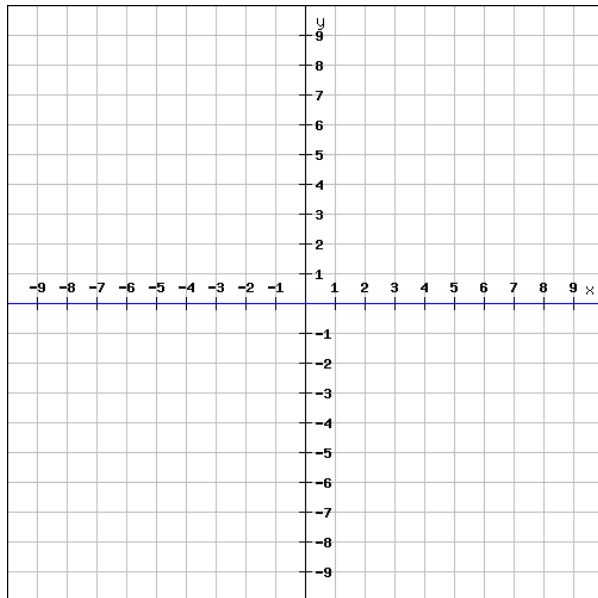
c)  $y = 1 - \log_3(x/2)$



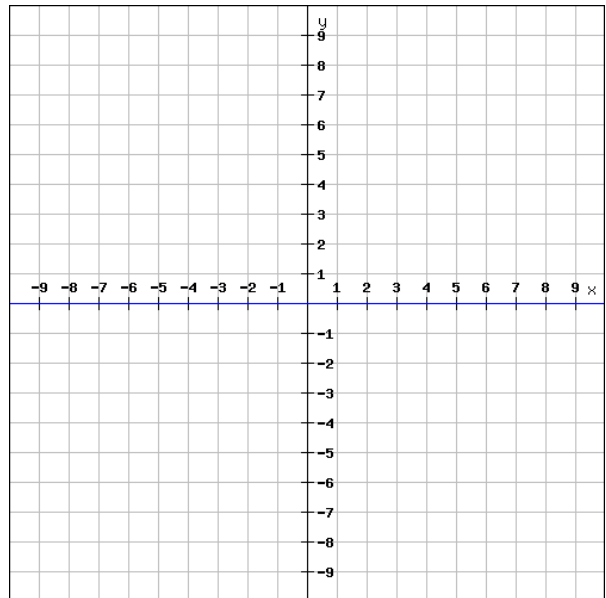
d)  $y = -2\log_{0.5}(2x-4) + 4$



Ex 2. Graph on the same grid  $y = \log_2 x$ ,  
 $y = \log_2(2x)$ , and  $y = 1 + \log_2 x$ .



Ex 3. Graph on the same grid  $y = \log_2 x$ ,  $y = \log_2 |x|$ ,  
 and  $y = |\log_2 x|$ .



**Reading:** Nelson Textbook, Pages 452-457

**Homework:** Nelson Textbook, Page 457: #4, 5, 6, 7, 8, 9, 11