

Pre-Calculus

KEY

Unit 3 Review I

1.  $3^{3x}5^{6y}$

2.  $(-)$   $\rightarrow$  vertical reflection  
6  $\rightarrow$  vertical stretch  
2  $\rightarrow$  horizontal stretch  
 $-7$   $\rightarrow$  vertical shift, down 7

3.  $\log_4 1024 = 3^x$

4.  $e^{60} = x - 5$

5.  $-4$

6. horizontal shift, left 4

7.  $4 \ln a - 5 \ln b + 6 \ln c$

8.  $\ln \left( \frac{c^4}{a^2 b^3 d^8} \right)$

9.  $x = \frac{\ln 30}{2} = \frac{1}{2} \ln 30 = \ln \sqrt{30}$

10.  $x = \frac{e^{30} - 1}{2}$