

Pre-Calculus

KEY

Unit 3 Review II

1.  $\frac{1}{3^{12x}5^{24y}}$

2. 2  $\rightarrow$  vertical stretch  
7  $\rightarrow$  horizontal shift, left 7  
5  $\rightarrow$  vertical shift, up 5

3.  $\log_5 625 = x + 5$

4.  $e^{x+5} = 9$

5.  $-3$

6. vertical stretch

7.  $3 \ln a + 2 \ln b - 5 \ln c - 4 \ln d$

8.  $\ln \left( \frac{a^4 b^5 d^9}{c^7} \right)$

9.  $x = \frac{\ln 18}{4} = \frac{1}{4} \ln 18 = \ln \sqrt[4]{18}$

10.  $x = \frac{e^{15} + 2}{3}$