2.9 Logarithmic Expressions
AP Precalculus   Name: _____

Directions: Rewrite the following logarithms as exponents.	
1) $log_{27}\frac{1}{9} = -\frac{2}{3}$	2) $\log 10{,}000 = 4$

Directions: Rewrite the following exponents as logarithms.	
3) $49^{\frac{1}{2}} = 7$	4) $2^{-3} = \frac{1}{8}$

Directions: WITHOUT using a CALCULATOR, find the value of logarithm.	
5) $log_{4}64$	6) $\log 100$

Directions: Use a CALCULATOR to find the value of logarithm. Round to three decimal places.	
7) $log_{7}145$	8) $\log 9843$

Directions: For the given data construct a plot using a LOGARITHMIC scale using the given bases. Be sure to label your axis and show your math. ·

9)

Super Hero	Bee Population at their home
Iron Man	18
Scarlett Witch	3
Black Panther	7
Dr. Strange	38
Ant-Man	265

Base 2   ⟨—+—+—+—+—+—+—+—+—⟩

Base 3   ⟨—+—+—+—+—+—+—+—+—⟩

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1. $27^{-\frac{2}{3}} = \frac{1}{9}$	2. $10^4 = 10,000$	3. $\log_{49} 7 = \frac{1}{2}$	4. $\log_2 \frac{1}{8} = -3$	5. 3
6. 2	7. 2.558	8. 3.993	9. SEE BELOW	

Super Hero	Bee Population at their home
Iron Man	18
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$\log_2 18 = 4.170 \quad \log_3 18 = 2.631$

$\log_2 3 = 1.585 \quad \log_3 3 = 1$

$\log_2 7 = 2.807 \quad \log_3 7 = 1.771$

$\log_2 38 = 6.249 \quad \log_3 38 = 3.311$

$\log_2 265 = 8.05 \quad \log_3 265 = 5.079$

Base 2

Base 3