

Directions: Convert the following equations from exponential form to logarithmic (log) form.

1. $2^3 = 8$

2. $10^3 = 1000$

3. $4^x = 7$

4. $y = e^{x-1}$

Directions: Convert the following equations from logarithmic (log) form to exponential form.

5. $\log_4 1 = 0$

6. $\log \frac{1}{100} = -2$

7. $\log_{16} y = \frac{1}{2}$

8. $\ln x = 4$

Directions: Evaluate the following expressions without a calculator.

9. $\log_3 9$

10. $\log_6 36$

11. $\ln 1$

12. $\log 10$

13. $\log_4 \frac{1}{16}$

14. $\log_2 8$

15. $\ln e^7$

16. $\ln \frac{1}{e^5}$

17. $\log_{25} 5$

18. $\log_{16} 2$

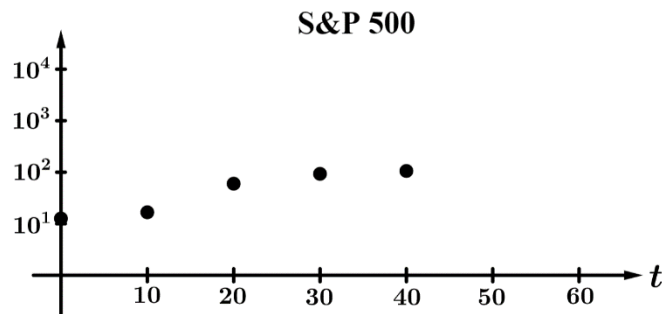
19. $\log_6 \sqrt{6}$

20. $\log_9 \frac{1}{3}$

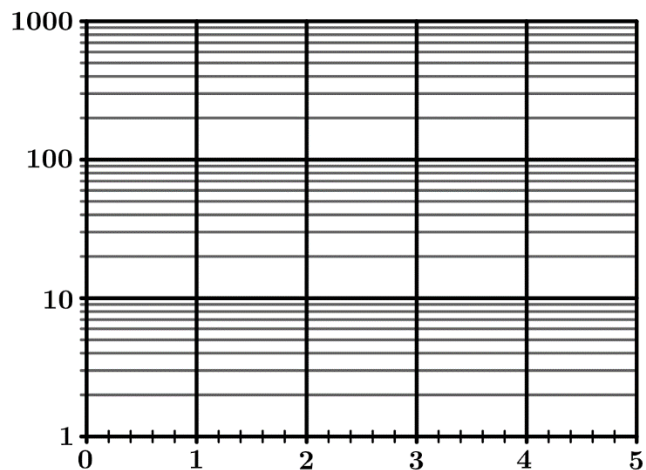
Years since 1940	0	10	20	30	40	50	60
S&P 500 Index	12.63	16.66	59.91	93.05	105.76	359.69	1455.22

21. The Standard and Poor's 500, commonly called the S&P 500, is a stock market index that tracks the stock performance of 500 of the largest companies listed on stock exchanges in the United States. The S&P 500 index is often used as a way to measure the direction of the economy. Selected values of the S&P 500 Index are included in the table above.

a) The first five points in the table above are already plotted on the graph below, where the vertical axis is logarithmically scaled. Plot the remaining two points, (50, 359.69) and (60, 1455.22), on the axes below.



b) For the years 1940 – 2000, the graph of the S&P 500 Index can be modeled by a linear function when the vertical axis was logarithmically scaled. What does this tell you about the S&P 500 Index during the years between 1940 – 2000?



22. Plot the following points on the coordinate grid above where the vertical axis has been logarithmically scaled.

- A**(0, 50) **B**(1, 200) **C**(2, 7) **D**(3.2, 150) **E**(4.6, 22)