

Pre-Calculus

Simplify each of the following. Your final answer should contain no radicals.

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|---|--|------------------------------|--|
| (1) $\log_5 5$ | (2) $\log_9 3$ | (3) $\log_{16} 2$ | (70) $\log_2 4 \log_3 9$ |
| (4) $\log_9 \frac{1}{9}$ | (5) $\log_{\frac{1}{3}} 9$ | (6) $\log_3 \frac{1}{9}$ | (73) $\log_{10} 10^5$ |
| (7) $\log_5 25$ | (8) $\ln e$ | (9) $\log_{\sqrt{2}} 4$ | (76) $\log_b \frac{\sqrt{b}}{b^2}$ |
| (10) $\log_4 \sqrt{2}$ | (11) $\log_5 \frac{1}{25}$ | (12) $\log_2 (-2)$ | (79) $(e^{\ln 3})^2$ |
| (13) $\log_{125} 5$ | (14) $\log_{\frac{3}{2}} \frac{3}{2}$ | (15) $\log_8 32$ | (82) $\log_b \sqrt{b}$ |
| (16) $\ln 1$ | (17) $\log_{\frac{2}{3}} \frac{27}{8}$ | (18) $\log_e e^2$ | (85) $\log \sqrt{10}$ |
| (19) $\log_{144} 12$ | (20) $\log_8 4$ | (21) $\log_{\frac{1}{3}} 9$ | (88) $\log_{\frac{1}{2}} b$ |
| (22) $\log_8 2$ | (23) $\log_2 8$ | (24) $\log_3 1$ | (71) $\log_2 (2^3 4^5)$ |
| (25) $\log_b 1$ | (26) $\log_{10} \frac{1}{100}$ | (27) $3 \log_4 2$ | (74) $2 \log_3 9$ |
| (28) $\log_{16} 2$ | (29) $\log_{125} 25$ | (30) $\log_{b^2} b$ | (77) $\log_6 \sqrt{12} + \log_6 \sqrt{3}$ |
| (31) $3^{2 \log_3 6}$ | (32) $\log_9 \frac{1}{3}$ | (33) $2^{\log_2 5}$ | (80) $\log_9 (27^{1/3})$ |
| (34) $\log_{\frac{1}{2}} \frac{1}{4}$ | (35) $\log_b \sqrt{b}$ | (36) $\log_{27} 3$ | (83) $b^{\log_b 3}$ |
| (37) $\ln e^2$ | (38) $e^{\ln 3}$ | (39) $\log_{25} 125$ | (86) $\ln \sqrt{e}$ |
| (40) $\log_4 \frac{\sqrt{8}}{2}$ | (41) $\log_7 \sqrt{7}$ | (42) $\log_{100} 10$ | (89) $\frac{1}{\log_{\frac{1}{2}} 4}$ |
| (43) $e^{2 \ln 5}$ | (44) $e^{-3 \ln 2}$ | (45) $e^{\ln 7}$ | (72) $\log_8 \frac{\sqrt{2}}{\sqrt{8}}$ |
| (46) $\log_5 125$ | (47) $\log_{1000} 10$ | (48) $\log_{64} \frac{1}{8}$ | (75) $\frac{\log_4 8}{\log_3 \frac{1}{9}}$ |
| (49) $\log_3 \frac{1}{27}$ | (50) $\log_{64} 8$ | (51) $\log_9 \frac{1}{27}$ | (78) $(\log_9 27)^2$ |
| (52) $\log_{25} 5$ | (53) $\log_4 2$ | (54) $\log_2 2 \sqrt{2}$ | (81) $\log_9 81 + \log_{81} 9$ |
| (55) $\log_{\frac{1}{25}} 5$ | (56) $\ln e^3$ | (57) $\log 10^b$ | (84) $b^3 \log_b 5$ |
| (58) $\log_{10} 1000$ | (59) $\log_{\sqrt{7}} 7$ | (60) $\log_4 \frac{1}{2}$ | (87) $\log_3 3 \sqrt{7} - \log_3 \sqrt{7}$ |
| (61) $\log 10^5$ | (62) $\log_4 32$ | (63) $\log_{36} 6$ | (90) $\frac{\log_4 8}{2}$ |
| (64) $\log_{\frac{1}{27}} 9$ | (65) $\log_9 27$ | (66) $\log_{\sqrt{2}} 4$ | |
| (67) $\log_{\frac{8}{3}} \frac{8}{125}$ | (68) $\log_8 \frac{2}{\sqrt{8}}$ | (69) $e^{\ln 3} e^{\ln 2}$ | |