

Expand: expand the logarithmic expression**Condense:** condense into a single logarithmic expression

<p>1. _____ answer: $\ln \left(\frac{(x-2)^5}{x^3(x+2)} \right)$</p> <p>Expand: $\log(n)^{-6}$</p>	<p>2. _____ answer: $\ln \left(\frac{x^4 y^7}{z^3} \right)$</p> <p>Condense: $\frac{1}{2}(\log_5 x + \log_5 y) - 2 \log_5(x + 1)$</p>
<p>3. _____ answer: $\frac{1}{3} \log x - \frac{1}{3} \log y$</p> <p>Expand: $\log_b \left(\frac{y^4 \sqrt[3]{x}}{z^5} \right)$</p>	<p>4. _____ answer: $\ln 64(z - 4)^5$</p> <p>Condense: $5 \ln(x - 2) - \ln(x + 2) - 3 \ln x$</p>
<p>5. _____ answer: $\ln \left(\frac{x^3}{\sqrt[3]{y}} \right)$</p> <p>Condense: $4 \ln x + 7 \ln y - 3 \ln z$</p>	<p>6. _____ answer: $-6 \log n$</p> <p>Expand: $\log_4 \left(\frac{64}{y} \right)$</p>
<p>7. _____ answer: $4 \log_b y + \frac{1}{3} \log_b x - 5 \log_b z$</p> <p>Expand: $\ln \frac{x^4 \sqrt{x^2+3}}{(x+3)^5}$</p>	<p>8. _____ answer: $2 \log_5 x - 2 \log_5 y - 3 \log_5 z$</p> <p>Condense: $\ln x + \ln 7$</p>
<p>9. _____ answer: $3 - \log_4 y$</p> <p>Expand: $\log_b(x^2 y)$</p>	<p>10. _____ answer: $\ln 7x$</p> <p>Condense: $\log_2 96 - \log_2 3$</p>

<p>11. _____ answer: 5</p> <p>Condense: $\frac{1}{2} \log x - 2 \log y$</p>	<p>12. _____ answer:</p> <p>$2 + 3 \log x + \frac{1}{3} \log(5 - x) - \log 3 - 2 \log(x + 7)$</p> <p>Expand: $\log \sqrt[4]{x^3(x^2 + 3)}$</p>
<p>13. _____ answer: $\log_5 \left(\frac{\sqrt{xy}}{(x+1)^2} \right)$</p> <p>Condense: $\log x + \log(x^2 - 4) - \log 15 - \log(x + 2)$</p>	<p>14. _____ answer:</p> <p>$4 \ln x + \frac{1}{2} \ln(x^2 + 3) - 5 \ln(x + 3)$</p> <p>Expand: $\log \left(\frac{100x^3 \sqrt[3]{5-x}}{3(x+7)^2} \right)$</p>
<p>15. _____ answer: $2 - \frac{1}{2} \log_6(x + 1)$</p> <p>Expand: $\log \sqrt[3]{\frac{x}{y}}$</p>	<p>16. _____ answer: $\log \frac{\sqrt{x}}{y^2}$</p> <p>Condense: $\frac{1}{2} \log_2 9 + \frac{1}{2} \log_2 5 + \log_2 x$</p>
<p>17. _____ answer: $\log_2(3x\sqrt{5})$</p> <p>Condense: $3 \ln x - \frac{1}{3} \ln y$</p>	<p>18. _____ answer: $2 \log_b x + \log_b y$</p> <p>Expand: $\log_6 \frac{36}{\sqrt{x+1}}$</p>
<p>19. _____ answer: $\log \frac{x(x-2)}{15}$</p> <p>Condense: $2 \ln 8 + 5 \ln(z - 4)$</p>	<p>20. _____ answer: $\frac{3}{4} \log x + \frac{1}{4} \log(x^2 + 3)$</p> <p>Expand: $\log_5 \left(\frac{x^2}{y^2 z^3} \right)$</p>