2. $\log_5\left(\dfrac{x}{2}\right) = \log_5 x - \log_5 2$

4. $\ln(\pi x) = \ln \pi + \ln x$

6. $\log_6 \sqrt[4]{17} = \frac{1}{4}\log_6 17$

8. $\log_2(xy)^{10} = 10\log_2(xy) = 10(\log_2 x + \log_2 y)$

10. $\log_a\left(\dfrac{x^2}{yz^3}\right) = \log_a x^2 - \log_a(yz^3) = 2\log_a x - (\log_a y + 3\log_a z)$

12. $\ln\sqrt[3]{3r^2 s} = \frac{1}{3}\ln(3r^2 s) = \frac{1}{3}[\ln(3s) + 2\ln r] = \frac{1}{3}(\ln 3 + \ln s + 2\ln r)$

14. $\log\dfrac{a^2}{b^4\sqrt{c}} = \log a^2 - \log(b^4\sqrt{c}) = 2\log a - \left(4\log b + \frac{1}{2}\log c\right)$

16. $\log_5\sqrt{\dfrac{x-1}{x+1}} = \frac{1}{2}\log_5\left(\dfrac{x-1}{x+1}\right) = \frac{1}{2}\left[\log_5(x-1) - \log_5(x+1)\right]$

18. $\ln\dfrac{3x^2}{(x+1)^{10}} = \ln(3x^2) - \ln(x+1)^{10} = \ln 3 + 2\ln x - 10\ln(x+1)$

20. $\log\dfrac{x}{\sqrt[3]{1-x}} = \log x - \log\sqrt[3]{1-x} = \log x - \frac{1}{3}\log(1-x)$

22. $\log\sqrt{x\sqrt{y\sqrt{z}}} = \frac{1}{2}\log\left(x\sqrt{y\sqrt{z}}\right) = \frac{1}{2}\left(\log x + \log\sqrt{y\sqrt{z}}\right) = \frac{1}{2}\left[\log x + \frac{1}{2}\log(y\sqrt{z})\right]$

$= \frac{1}{2}\left[\log x + \frac{1}{2}\left(\log y + \frac{1}{2}\log z\right)\right] = \frac{1}{2}\log x + \frac{1}{4}\log y + \frac{1}{8}\log z$

24. $\log\dfrac{10^x}{x(x^2+1)(x^4+2)} = \log 10^x - \log\left[x(x^2+1)(x^4+2)\right]$

$= x - [\log x + \log(x^2+1) + \log(x^4+2)]$

26. $\log_2 112 - \log_2 7 = \log_2\dfrac{112}{7} = \log_2 16 = \log_2 2^4 = 4$

28. $\log\sqrt{0.1} = \log 0.1^{1/2} = \frac{1}{2}\log 0.1 = \frac{1}{2}\log 10^{-1} = -\frac{1}{2}$

30. $\log_{12} 9 + \log_{12} 16 = \log_{12}(9\cdot 16) = \log_{12} 144 = \log_{12} 12^2 = 2$

32. $e^{3\ln 5} = (e^{\ln 5})^3 = 5^3 = 125$

34. $\log_2 8^{33} = \log_2(2^3)^{33} = \log_2 2^{99} = 99$

36. $\log 12 + \frac{1}{2}\log 7 - \log 2 = \log\left(12\sqrt{7}\right) - \log 2 = \log\dfrac{12\sqrt{7}}{2} = \log\left(6\sqrt{7}\right)$

38. $\log_5(x^2-1) - \log_5(x-1) = \log_5\dfrac{x^2-1}{x-1} = \log_5\dfrac{(x-1)(x+1)}{x-1} = \log_5(x+1)$