28.7 1)

α) $\log_6 2+\log_6 18=\log_6(2\cdot 18)=\log_6 36=\log_6 6^2=2$

β) $\log 200-\frac{1}{3}\log 8=\log 200-\log 8^{\frac{1}{3}}=\log 200-\log\sqrt[3]{8}=\log 200-\log 2=\log\frac{200}{2}=\log 100=2$

γ) $\log\frac{50}{9}+3\log\frac{3}{2}+\log\frac{16}{3}=\log\frac{50}{9}+\log\frac{27}{8}+\log\frac{16}{3}=\log\left(\frac{50}{\cancel{9}}\cdot\frac{\cancel{27}}{\cancel{8}}\cdot\frac{\overset{2}{\cancel{16}}}{\cancel{3}}\right)=\log 100=2$

28.7 2)

$\log 5+\log 2=\log 5\cdot 2=\log 10=1$

28.7 3)

$\log 4+\log 25=\log(4\cdot 25)=\log 100=2$

28.7 4)

$\log 50+\log 2000=\log(50\cdot 2000)=\log 100000=\log 10^5=5$

28.7 5)

$\log_2 24-\log_2 3=\log_2\left(\frac{24}{3}\right)=\log_2 8=3$

28.7 6)

$\log 40-\log 4=\log\left(\frac{40}{4}\right)=\log 10=1$

28.7 7)

$\log 25+\log 400=\log(25\cdot 400)=\log 10000=\log 10^4=4$

28.7 8)

$\log 2-\log 200=\log\left(\frac{2}{200}\right)=\log\frac{1}{100}=\log 10^{-2}=-2$

28.7 9)

$3\log 2+\log 125=\log 2^3+\log 125=\log(8\cdot 125)=\log 1000=3$

28.7 10)

$2\log 5+\log 20+\log 2=\log 25+\log 20+\log 2=\log(25\cdot 20\cdot 2)=\log 1000=3$

28.7 11)

$2\log 40-4\log 2=\log 40^2-\log 2^4=\log\left(\frac{40^2}{24}\right)=\log\left(\frac{1600}{16}\right)=\log 100=2$

28.7 12)

$\log 300-\frac{1}{2}\log 9=\log 300-\log 3=\log\left(\frac{300}{3}\right)=\log 100=2$

28.7 13)

$2\log 2+3\log 3-\log 12=\log 2^2+\log 3^3-\log 12=\log 10=1$

$=\log\left(\frac{4\cdot 27}{12}\right)=\log\left(\frac{27}{3}\right)=\log 9=\log 3^2=2\log 3$

28.7 14)

$$\log 200 = \log\left(8\cdot 25\right) = \log 8 + \log 25 = \log 2^3 + \log 5^2 = 3\log 2 + 2\log 5$$

28.7 15)

$$\log 3 + 2\log 4 - \log 12 = \log 3 + \log 4^2 - \log 12 =$$

$$= \log\left(\frac{3\cdot 4^2}{12}\right) = \log 4 = \log 2^2 = 2\log 2$$

28.7 16)

$$\frac{1}{2}\log 16 + \frac{1}{3}\log 8 + \frac{1}{4}\log 81 = \log\sqrt{16} + \log\sqrt[3]{8} + \log\sqrt[4]{81} =$$

$$= \log 4 + \log 2 + \log 3 = \log\left(4\cdot 2\cdot 3\right) = \log 24$$

28.7 17)

$$\frac{1}{2}\log_{\frac{1}{2}}\frac{1}{4} - \frac{1}{3}\log_{\frac{1}{3}}\frac{1}{27} = \frac{1}{2}\log_{\frac{1}{2}}\left(\frac{1}{2}\right)^2 - \frac{1}{3}\log_{\frac{1}{3}}\left(\frac{1}{3}\right)^3 =$$

$$= \frac{2}{2}\log_{\frac{1}{2}}\frac{1}{2} - \frac{3}{3}\log_{\frac{1}{3}}\frac{1}{3} = 1 - 1 = 0$$

28.7 18)

$$\frac{1}{2}\log 25 + \frac{1}{3}\log 8 + \frac{1}{5}\log 32 = \frac{1}{2}\log 5^2 + \frac{1}{3}\log 2^3 + \frac{1}{5}\log 2^5 =$$

$$= \frac{2}{2}\log 5 + \frac{3}{3}\log 2 + \frac{5}{5}\log 2 = \log\left(5\cdot 2\right) + \log 2 =$$

$$= \log 10 + \log 2 = 1 + \log 2$$

28.7 19)

$$\log\frac{9}{16} + \log\frac{40}{81} = \log\left(\frac{9\cdot 40}{16\cdot 81}\right) = \log\left(\frac{10}{4\cdot 9}\right) =$$

$$= \log\frac{5}{18} = \log 5 - \log 18$$

28.7 20)

$$\log\frac{75}{16} - 2\log\frac{5}{9} + \log\frac{32}{243} = \log\frac{75}{16} - \log\frac{5^2}{9^2} + \log\frac{32}{243} =$$

$$= \log\frac{75}{16} + \log\frac{81}{25} + \log\frac{32}{243} = \log\left(\frac{75\cdot 81\cdot 32}{16\cdot 25\cdot 243}\right) =$$

$$= \log\left(\frac{3\cdot 2}{3}\right) = \log 2$$