

31.1 1)

$$\log 4 = \log 2^2 = 2 \log 2 = 2\alpha$$

31.1 2)

$$\log 5 = \log \left(\frac{10}{2} \right) = \log 10 - \log 2 = 1 - \alpha$$

31.1 3)

$$\log 6 = \log (3 \cdot 2) = \log 3 + \log 2 = \alpha + \beta$$

31.1 4)

$$\log 12 = \log (3 \cdot 2 \cdot 2) = \log 3 + 2 \log 2 = \beta + 2\alpha$$

31.1 5)

$$\log 15 = \log \frac{30}{2} = \log 30 - \log 2 = \log 3 \cdot 10 - \log 2 =$$

$$= \log 3 + \log 10 - \log 2 = \beta + 1 - \alpha$$

31.1 6)

$$\log 30 = \log 3 \cdot 10 = \log 3 + \log 10 = 1 + \beta$$

31.1 7)

$$\log 36 = \log 6^2 = 2 \log 6 = 2 \log 3 \cdot 2 = 2(\log 3 + \log 2) = 2\alpha + 2\beta$$

31.1 8)

$$\log \frac{\sqrt{72}}{50} = \log \sqrt{72} - \log 50 = \log 72^{\frac{1}{2}} - \log \frac{100}{2} =$$

$$= \frac{1}{2} \log 72 - \log 100 + \log 2 = \frac{1}{2} \log (36 \cdot 2) - \log 100 + \log 2 =$$

$$= \frac{1}{2} (\log 36 + \log 2) - \log 100 + \log 2 =$$

$$= \frac{1}{2} ((2\alpha + 2\beta) + \alpha) - 2 + \alpha = \beta + \frac{3\alpha}{2} - 2 + \alpha = \frac{5\alpha + 2\beta - 4}{2}$$