

班級 _____ 班 座號 _____ 姓名 _____

答案

一、填充題 (13 格 每格 0 分 共 0 分)

$$1. \frac{11}{3} \quad 2. -\frac{3}{2} \quad 3. \frac{5}{2} \quad 4.5 \quad 5.2 \quad 6. \frac{13}{12} \quad 7. (1) -\frac{3}{2}; (2) 2; (3) 2 \quad 8.3 \quad 9.1 \quad 10.0 \quad 11. (1) 5; (2) 4 \quad 12.4 \quad 13.2$$

解析

一、填充題 (13 格 每格 0 分 共 0 分)

$$2. \log_{0.01} 0.001 + \log_{0.1} 100 + \log_{0.01} 100 = \frac{3}{2} - 2 - 1 = -\frac{3}{2}$$

$$4. \text{原式} = (\log_2 3 + \log_2 3)(2\log_3 2 + \frac{1}{2}\log_3 2) = (2\log_2 3)(\frac{5}{2}\log_3 2)$$

$$= 5 \times \log_2 3 \times \log_3 2 = 5$$

$$5. 2\log_{10} \frac{5}{3} - \log_{10} \frac{7}{4} + 2\log_{10} 3 + \frac{1}{2}\log_{10} 49$$

$$= 2(\log_{10} 5 - \log_{10} 3) - (\log_{10} 7 - \log_{10} 4) + 2\log_{10} 3 + \log_{10} 7 = 2\log_{10} 5 + \log_{10} 4$$

$$= 2(\log_{10} 5 + \log_{10} 2) = 2$$

$$6. \log_{\frac{1}{16}} \frac{1}{2} + \log_{\frac{1}{25}} \frac{1}{5} + \log_{\frac{1}{27}} \frac{1}{3} = \frac{1}{4} + \frac{1}{2} + \frac{1}{3} = \frac{13}{12}$$

$$7. (1) \text{原式} = \log_{10^{-2}} 10^{-3} + \log_{10^{-1}} 10^2 + \log_{10^{-2}} 10^2 = \frac{-3}{-2} + \frac{2}{-1} + \frac{2}{-2} = -\frac{3}{2}$$

$$(2) \text{原式} = \log_{\sqrt{2}} \log_{\sqrt{6}} \log_{\frac{1}{5^2}} 5^3 = \log_{\sqrt{2}} \log_{\sqrt{6}} 6$$

$$= \log_{\sqrt{2}} \log_{\frac{1}{6^2}} 6 = \log_{\sqrt{2}} 2 = \log_{\frac{1}{2^2}} 2 = 2$$

$$(3) \text{原式} = \log_{10} \left(\frac{5}{3}\right)^2 - \log_{10} \frac{7}{4} + \log_{10} 3^2 + \log_{10} 49^{\frac{1}{2}}$$

$$= \log_{10} \frac{25}{9} - \log_{10} \frac{7}{4} + \log_{10} 9 + \log_{10} 7$$

$$= \log_{10} \left(\frac{25}{9} \times \frac{4}{7} \times 9 \times 7\right) = \log_{10} 100 = \log_{10} 10^2 = 2$$

$$8. \text{原式} = 6 \times \frac{1}{2} - 3 \times \frac{1}{2} \log_2 3 + \frac{3}{2} \log_2 3 = 3$$

$$9. \text{原式} = \log_{10} 2 + \frac{1}{2}(\log_{10} 3 + \log_{10} 5) - \frac{1}{2}(\log_{10} 3 - \log_{10} 5) = \log_{10} 2 + \log_{10} 5$$

$$= \log_{10}(2 \times 5) = 1$$

$$11.(1) \text{原式} = \log_2(\sqrt{2})^4 - \log_2 3^{\frac{1}{2}} + \log_2 \frac{\sqrt{3}}{2} + \log_2 4^2 = \log_2 \frac{4 \times \frac{\sqrt{3}}{2} \times 16}{\sqrt{3}}$$

$$= \log_2 32 = 5$$

$$(2) \text{原式} = \log_{10^{-1}} 10^3 + 0 - \log_2 \frac{1}{8} + \frac{\log_9 25^2}{\log_9 5} = -3 + 0 - \log_2 2^{-3} + \log_5 (5^2)^2$$

$$= -3 + 0 - (-3) + 2^2 = 4$$

$$12. \text{原式} \Rightarrow \log_{10}[(x+1)(x-2)] = \log_{10} 10$$

$$\Rightarrow (x+1)(x-2) = 10 \Rightarrow x^2 - x - 12 = 0$$

$$\Rightarrow (x-4)(x+3) = 0$$

$$\Rightarrow x = 4 \text{ 或 } -3 \text{ (不合)}, \text{ 故 } x = 4$$

$$13. \text{原式} \Rightarrow \log_5 \frac{7x+10}{2x-1} = \log_5 8$$

$$\Rightarrow \frac{7x+10}{2x-1} = 8 \Rightarrow x = 2$$