

Решение:

$$1) \frac{\lg 4^3 + \lg 0,5}{\lg 7 - \lg 14} = \frac{\lg(64 \cdot 0,5)}{\lg(7:14)} = \frac{\lg 32}{\lg 0,5} = \log_{\frac{1}{2}} 32 = -\log_2 32 = -6$$

$$2) x^2 + 1 = x + 3; \quad x^2 - x - 2 = 0; \quad D = 3^2; \quad x = \{-1; 2\}$$

$$\int_{-1}^2 (x^2 + 1) dx = \left(\frac{x^3}{3} + x \right) \Big|_{-1}^2 = \left(\frac{8}{3} + 2 \right) - \left(-\frac{1}{3} - 1 \right) = 6$$