

1. Simplify the expression:

(1) $\sqrt[5]{64} + 4\sqrt[5]{-32} + 3\sqrt[4]{81}$

1. _____
(1) _____

(2) $\frac{\sqrt[3]{a} \times a}{\sqrt{a^3}}$

(2) _____

(3) $\sqrt{a^5} \div a^{\frac{2}{3}} \times a^3 \div a^{-\frac{1}{6}}$

(3) _____

(4) Given $t = \frac{1}{2}(a^x - a^{-x})$ with $a > 0$, simplify $t + \sqrt{t^2 + 1}$.

(4) _____

(5) $(\log_2 3 + \log_4 9) \left(\log_9 \frac{1}{4} \right)$

(5) _____

(6) $\frac{\log_5 8 + \log_5 0.005}{\log_{\sqrt{2}} 0.125}$

(6) _____

2. Solve the equations and the inequalities:

(1) $4^x - 3 \cdot 2^{x+1} - 16 = 0$

2. _____
(1) _____

(2) $9 \cdot 3^{2x} - 244 \cdot 3^x + 27 = 0$

(2) _____

(3) $27^x - 4 \cdot 3^{2x-1} + 3^{x-1} < 0$

(3) _____

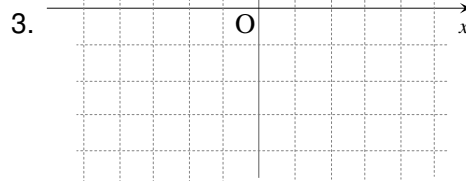
(4) $\log_2 \sqrt{x-2} = 2^{-1}$

(4) _____

(5) $\log_2 x + \log_2(x-1) \leq 1$

(5) _____

3. Draw the graph: $y = 2\log_{10}(3-x)$



4. Find the inverse function of the following function. $y = \frac{2^x - 2^{-x}}{2}$.

4. _____