

$$\log_3 x = 3 \quad \Rightarrow \quad x = 27$$

$$1) \log_2 x = -1 \quad \Rightarrow \quad x = 2^{-1} = \frac{1}{2}$$

$$2) \log_2 x = 5 \quad \Rightarrow \quad x = 2^5 = 32$$

$$3) \log_2(2^5 \cdot 2) = \log_2(32) \quad \Rightarrow \quad x = 32$$

$$4) \log_2(\sqrt[3]{x}) = 3 \quad \Rightarrow \quad x = (\sqrt[3]{2})^3 = 8$$

$$5) \log_2 x = -2 \quad \Rightarrow \quad x = 2^{-2} = \frac{1}{4}$$

$$6) \log_2 x = 12 \quad \Rightarrow \quad x = 2^{12} = 4096$$

$$7) \log_2 \sqrt[3]{a} = \log_2 a^{-\frac{1}{3}} = \frac{1}{3} \log_2 a$$

$$8) \log_b a = \frac{\ln a}{\ln b} = \frac{\ln a}{\ln b}$$

$$9) \log_2 32 = 5 = \frac{\ln 32}{\ln 2}$$

$$10) 300 - \log 3 = \log \frac{300}{3} = \log 100 = 2$$

$$11) \log_2 36 - \log_2 3 = \log_2 \frac{36}{3} = \log_2 12 = 5$$

$$12) \log_3 54 - \log_2 2 = \log_3 27 = 3$$

$$13) 20000 - 183_3 = \frac{1}{2}$$

$$N(t) = N \cdot e^{-kt}$$

$$\frac{N_0}{N} = N_0 e^{-kt}$$

$$\ln(\frac{N_0}{N}) = \ln(e^{-kt})$$

$$\ln(\frac{N_0}{N}) = -kt$$

$$14) \log_2 10 + \log_2 \frac{4}{5} + \log_2 4 = \log_2 \left(\frac{10 \cdot 4}{5} \right) = \log_2 16 = 4$$

$$15) \log_2 10 + \log_2 \frac{4}{5} + \log_2 \frac{4}{5} = \log_2 \left(10 \cdot \frac{4}{5} \cdot \frac{4}{5} \right) = \log_2 2 = 1$$

$$16) \log(x+2) + \log(x+4) = 1 \quad \Rightarrow \quad \log((x+2)(x+4)) = 1 \quad \Rightarrow \quad (x+2)(x+4) = 10$$

$$17) \log(x^2 - 4) = 1 \quad \Rightarrow \quad x^2 - 4 = 10 \quad \Rightarrow \quad x^2 = 14 \quad \Rightarrow \quad x = \pm \sqrt{14}$$

$$18) \log_2 x^2 - \log_2 2x = 4 \quad \Rightarrow \quad \log_2 \frac{x^2}{2x} = 4 \quad \Rightarrow \quad \log_2 \frac{x}{2} = 4 \quad \Rightarrow \quad \log_2 x - \log_2 2 = 4 \quad \Rightarrow \quad \log_2 x = 4 + \log_2 2 = 5$$

$$19) \log(u+v) + \log(u-v) = \log(u+v)(u-v)$$

$$20) \log u^2 + \frac{1}{2} \log(u+v)^2 + \log(u-v)^2 = \log(u+v)(u-v)$$

$$21) \log u^2 + \log(u+v)^2 + \log(u-v)^2 = \log(u+v)(u-v)$$

$$22) \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$23) \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$24) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$25) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$26) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$27) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$28) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$29) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$30) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$31) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$32) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$33) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$34) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$35) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$36) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$37) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$38) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$39) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$40) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$41) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$42) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$43) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$44) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$45) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$46) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$47) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$48) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$49) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$50) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$51) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$52) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$53) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$54) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$55) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$56) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$57) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$58) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$59) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$60) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$61) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$62) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$63) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$64) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$65) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$66) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$67) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$68) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$69) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$70) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$71) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$72) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$73) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$74) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$75) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$76) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$77) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$78) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$79) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$80) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$81) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$82) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$83) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$84) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$85) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$86) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$87) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$88) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$89) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$90) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$91) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$92) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$93) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$94) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$95) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$96) \frac{1}{2} \log(u^2 + \sqrt{u^2 - v^2}) = \log(u^2 - v^2)$$

$$97)$$