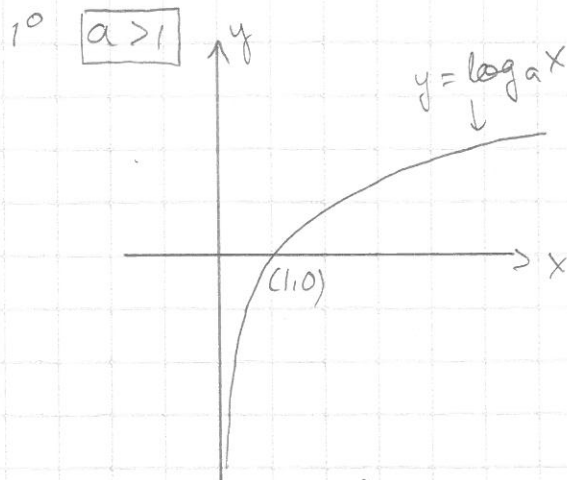
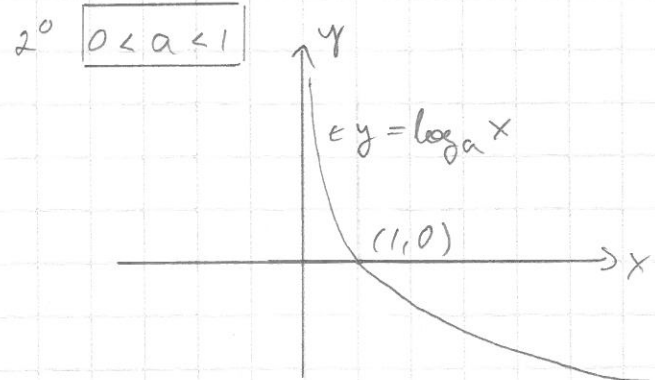


$$\left. \begin{array}{l} a^{\log_a b} = a^x = b \\ \uparrow \\ (\log_a b = x) \\ \log_a a^b = b \end{array} \right\} \Rightarrow$$

$$\boxed{\begin{array}{l} a^{\log_a b} = b \\ \log_a a^b = b \end{array}}$$



$\log_a x$ on aidoti kasvava, $x > 0$



$\log_a x$ on aidoti vähenevä, $x > 0$

11.7 $g: 4$, $\phi: 1$, $h: 2$, $i: 3$

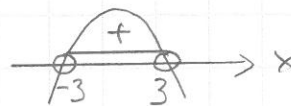
11.9 a) $\log_{10} 10\,000 = 4$ ($10^4 = 10\,000$)
 b) $\log_{10} 1 = 0$ ($10^0 = 1$)
 c) $10^{\log_{10} 37} = 37$
 d) $10^{\log_{10} 10^3} = 10^3 = 1000$

11.14 $f(x) = \log_5(9 - x^2)$

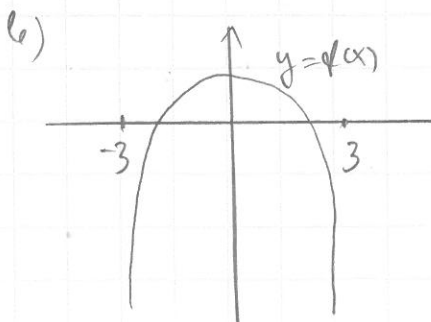
a) $9 - x^2 > 0$

1° Vastaus yhtälö: $9 - x^2 = 0 \Leftrightarrow 9 = x^2 \quad (\sqrt{} \Leftrightarrow) \quad x = \pm\sqrt{9} = \pm 3$

2° Paraabeli-kuvaaja:



3° Vastaus: $-3 < x < 3$



Kuvaja on positiivisesti vain $x \in$ avoimella $-3 < x < 3$