1. Evaluate without a calculator: a) $\log_3 81$ b) $\log_5 \sqrt{125}$ c) $2\log_8 512$ d) $2\log_x(x^5)$
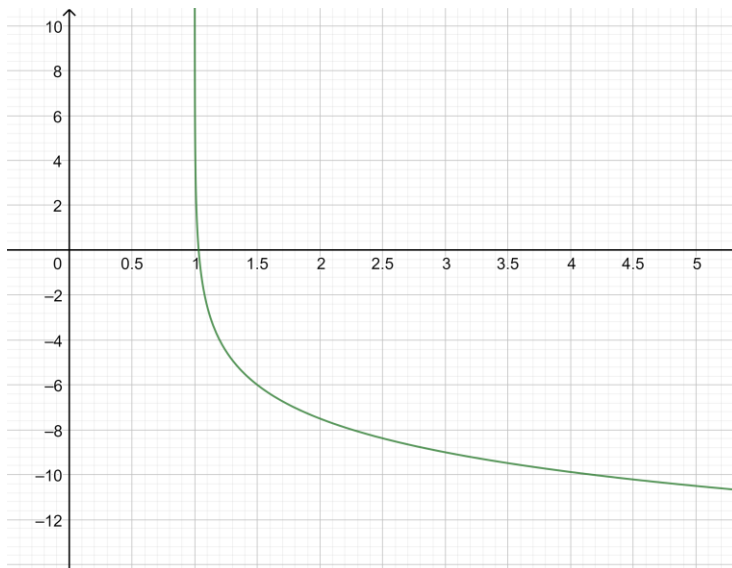
2. If $\log_a b = 4.5$ and $\log_a c = 3.7$, then what is $\log_a\left(\dfrac{b^2}{c}\right)$?

3. Simplify: a) $\log x^{\frac{1}{2}} + \log y^{\frac{1}{2}} - \frac{1}{2}\log xy$ b) $\left(5^{\log_5 2}\right)\left(5^{\log_5 3}\right) - 1$ c) $\log_x 4 + \log_x 8 - \frac{1}{4}\log_x 16$

4. If $\log 2 = a$ and $\log 3 = b$, then what is $\log 288$ in terms of $a\ and\ b$?

5. Graph $y = -3\log_4(2x - 2) - 6$, and determine its intercept(s), domain, range and equation of the asymptote.

1. A) 4   b) $\frac{3}{2}$ c) 6   d) 10
2. 5.3
3. A) 0   b) 5   c) $\log_x 16$
4. $5a + 2b$
5.

x-intercept: $\left(\frac{33}{32}, 0\right)$, Domain: $x > 1$, Range: $y \in R$, Asmptote: $x = 1$