Math 165 Sp'10 Lowman
Solutions to Part II of special assignment 4.

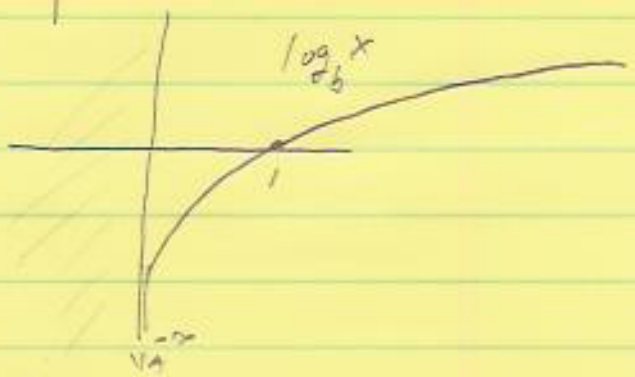
1. • Log Rules

• definition $x = b^y$, $y = \log_b x$

• $\log_b(1) = 0$

• $\log_b(b) = 1$

• $\log_b(b^x) = x$



• $b^{\log_b x} = x$

• $\log_b(A \cdot B) = \log_b A + \log_b B$

• $\log_b\left(\frac{A}{B}\right) = \log_b A - \log_b B$

• $\log_b x^n = n \log_b x$

• If $\log_b x = \log_b y$ then $x = y$

• If $b^x = b^y$ then $x = y$

• $\log_a x = \frac{\log_b(x)}{\log_b(a)} = \frac{\ln(x)}{\ln(a)}$

• $\frac{d}{dx} \ln u(x) = \frac{u'(x)}{u(x)}$, • $\int \frac{u'(x)}{u(x)} dx = \ln|u(x)| + C$

• $\frac{d}{dx} e^{u(x)} = u'(x) \cdot e^{u(x)}$, • $\int u'(x) \cdot e^{u(x)} dx = e^{u(x)} + C$