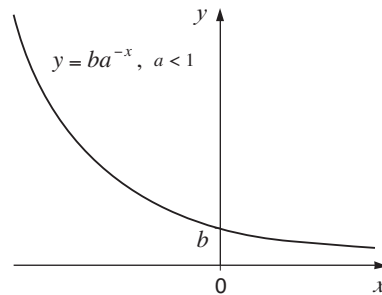
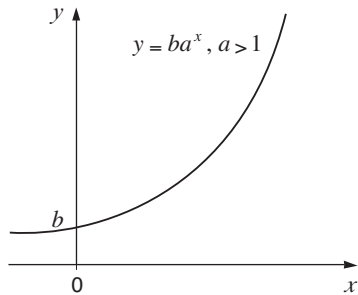


Growth and Decay

Essential information

- The graphs of the **exponential (power) function**, $y = ba^x$, for constants a and b , is given by (for $b > 0$):



- If $y = e^x$, $\frac{dy}{dx} = e^x$
- If $e^x = a$, then $x = \ln a$
- $y = e^x$ and $y = \ln x$ are inverse functions
- Properties of logarithms:**

$$\ln(a^x) = x \ln a$$

$$\ln(ab) = \ln a + \ln b$$

$$\ln\left(\frac{a}{b}\right) = \ln a - \ln b$$