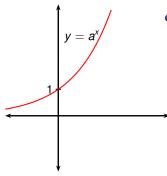
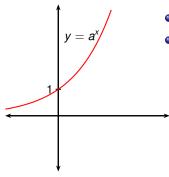
# Precalculus Logarithm definition

**Todor Milev** 

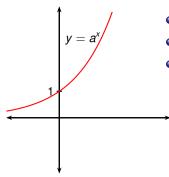
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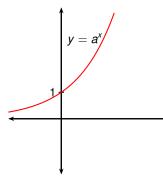
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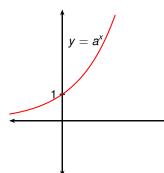
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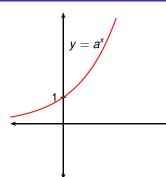
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- Therefore f has an inverse function,  $f^{-1}$ .

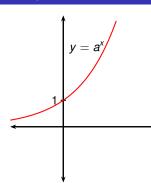


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The inverse function of  $f(x) = a^x$  is called the logarithmic function with base a, and is written  $\log_a x$ . It is defined by the formula

$$\log_a x = y \qquad \Leftrightarrow \qquad a^y = x.$$

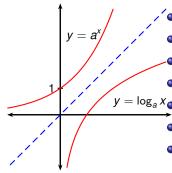


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- Let  $f(x) = a^x$ .
  - Then f is either increasing or decreasing.
  - Therefore f is one-to-one.
- $y = \log_a x_{\bullet}$  Therefore f has an inverse function,  $f^{-1}$ .
  - The graph shows  $y = a^x$  for a > 1.
  - The graph of  $y = \log_a x$  is the reflection of this in the line y = x.

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