## DERIVATIVE GRAPH OF EXPONENTIAL FUNCTIONS:

The graph on the left is the exponential function  $y = 10^x$ .

The gradient of  $y = 10^x$  is positive but getting steeper, so the graph of its gradient/derivative function is steeper than  $y = 10^x$ .



When drawing derivative graphs, take note of:

- when the graph is increasing (derivative graph is positive)
- when the graph is decreasing (derivative graph is negative)
- a turning point or horizontal point (derivative graph has value of zero)

## 7.1 WORKED EXAMPLE

Draw the derivative graph of  $y = e^x$ . What is the relationship between the derivative graph and the original graph?



There is an exponential function for which its gradient function is the same as the original function, and that is the function  $y = e^x$ .