

Determine if the following statements are sometimes true, always true, or never true. Support your conclusions.

1. The domain of an exponential function $f(x)=b^x$, $b > 0$, $b \neq 1$, is the set of positive numbers.

$$6. \log_b \frac{x}{y} = \frac{\log_b x}{\log_b y}$$

2. An exponential function $f(x) = b^x$, $b > 0$, $b \neq 1$, has an inverse function.

$$7. \frac{\log x}{\log y} = \frac{x}{y}$$

3. The graph of an exponential function $f(x)=b^x$, $b > 0$, $b \neq 1$, passes through the point $(0, 0)$.

$$8. \log(x + y) = \log x + \log y$$

4. For the function $f(x) = b^x$, $b > 0$, $b \neq 1$, the base b is a positive integer.

$$9. \log_b \sqrt{x} = \frac{1}{2} \log_b x$$

5. An exponential function $f(x) = b^x$, $b > 0$, $b \neq 1$, has two x -intercepts.

$$10. \ln e^\heartsuit = \heartsuit$$