Exercise 55

Solve each inequality for x.

(a) $\ln x < 0$ (b) $e^x > 5$

Solution

Part (a)

$$\ln x < 0$$

Exponentiate both sides.

$$e^{\ln x} < e^0$$

$$x < 1$$

Looking at the initial inequality, $x > 0$ is a requirement: The argument of a logarithm must be positive. Therefore,

$$0 < x < 1.$$

Part (b)

$$e^x > 5$$

Take the natural logarithm of both sides.

$$\ln e^x > \ln 5$$

$$x \ln e > \ln 5$$

$$x > \ln 5$$