Answer on Question #57057 – Math – Calculus

Question

Graph

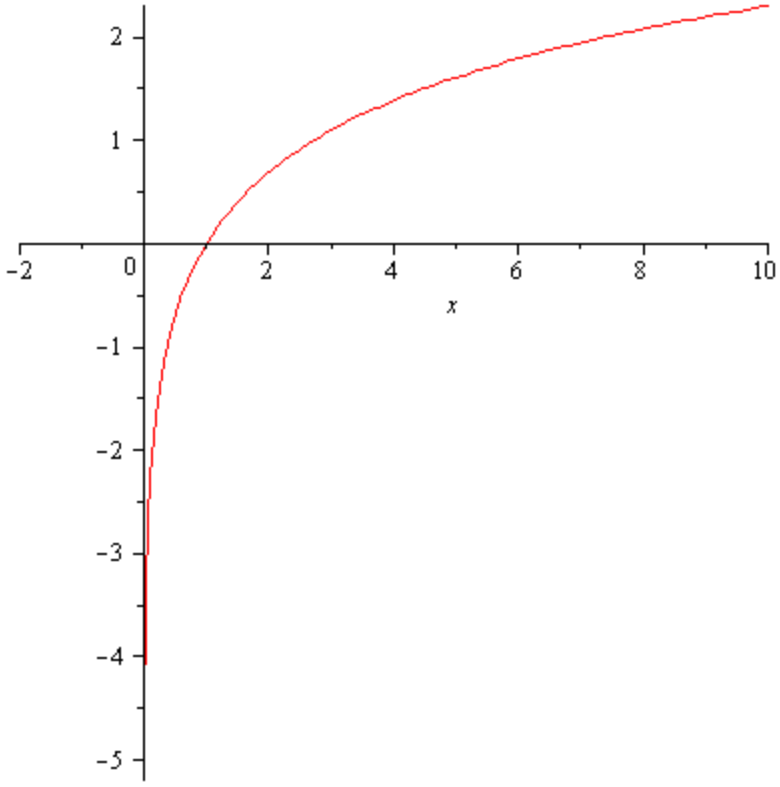
(i) $\ln(x-3)+4$

and

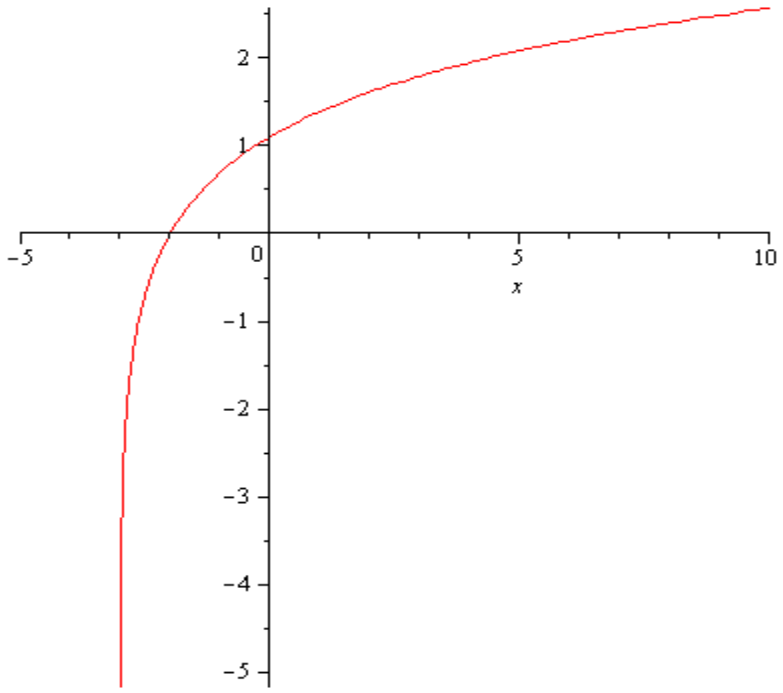
(ii) $\ln(x+3)$.

Solution

We start from the graph of $\ln x$:

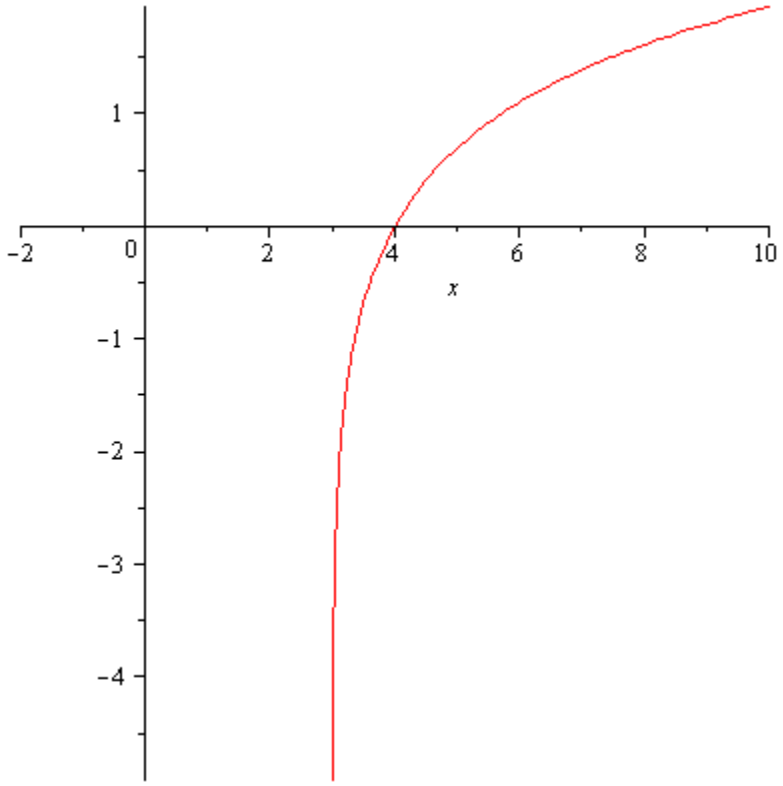


(ii) To graph $\ln(x+3)$ we must shift the graph of $\ln x$ into 3 units to the left along the x-axis:

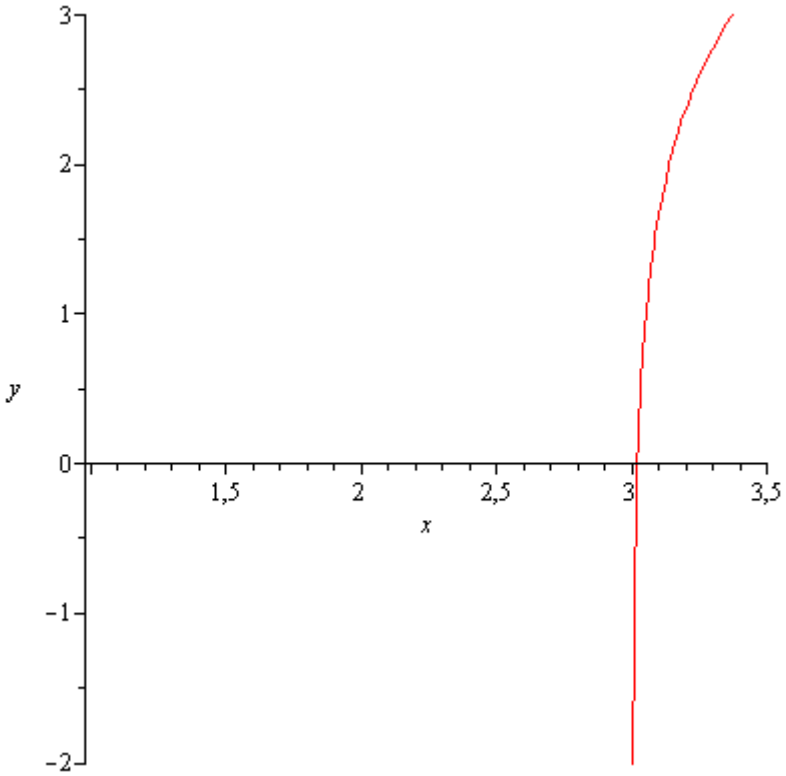


The line $x = -3$ is a vertical asymptote for the graph of $\ln(x + 3)$.

(i) Let us graph $\ln(x - 3) + 4$. First we shift the graph of $\ln x$ into 3 units to the right along the x-axis. We obtain the graph of $\ln(x - 3)$:



Further we must shift the graph of $\ln(x - 3)$ into 4 units up along the y-axis:



The line $x = 3$ is a vertical asymptote for the graph of $\ln(x - 3) + 4$.