2. [7 points] Olga runs a factory that produces pitch, and finds that the cost C (in thousands of dollars) to produce g gallons of pitch is given by $C = f(g)$, where:

$$f(g) = 5 + \log\left(3 + e^{7g}\right)$$

for $g \geq 0$. Note that f is an invertible function.

a. [5 points] Find a formula for the quantity of pitch $f^{-1}(C)$ (in gallons) that the factory must have produced in terms of the total cost C (in thousands of dollars) incurred. You must **show your work** carefully for this part.

$f^{-1}(C) =$ _____

b. [2 points] What is the range of $f^{-1}(C)$? Write your final answer *in the space provided*, **using inequalities**.

The range of $f^{-1}(C)$ *is* _____