5. [7 points] Ross is playing "Dinomite 2" again. In round 2018 he is given that the population of the Gigantosaurus t years after 65 million years ago can be modeled by the following function:

$$G(t) = 47 + 38\cos(\pi(t-3))$$

Help Ross find all values of t on the interval [3,6.5] for which the population of the Gigantosaurus is equal to 77. You should show **all your work** for this problem and give your answer in **exact** form.

t=_____

6. [5 points] Joey is taking a road trip from New York to Los Angeles to continue his acting career. The computer in his car calculates that when the car's speed is v miles per hour (mph), the car uses

$$g = f(v) = \frac{1}{20}\log(27 \cdot 10^v)$$

gallons of gas per hour. Assume the domain of $f(v)$ is $(0, 150]$.
Find a formula for $f^{-1}(g)$.

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

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