5. [10 points]

a. [2 points] Consider the function $P(t)$ defined by

$$P(t) = \begin{cases} \frac{70t(t-6)}{(t-10)(t+2)} & \text{if } 0 \le t \le 5 \\ 2 + 5e^{5-t} & \text{if } t > 5. \end{cases}$$

Evaluate $P(5)$ and $P(P(5))$.

$P(5) =$ _____ $P(P(5)) =$ _____

b. [4 points] Below, you are given a table with some data about two functions: $f(t)$ and $h(t)$. You are also given information about some transformations and combinations of these functions. Fill in the missing entries in the table. You may assume $f(t)$ and $h(t)$ are invertible functions. *No work or explanation is required.*

t	0	1	2	3
$f(t)$	2	4	5	9
$h(t)$	3	8		7
$f(h(t))$		6	4	11
$f^{-1}(t)$	12	11		10
$f(t+3)$		7	8	12

c. [4 points] Suppose $g(x)$ is a power function such that $g(1) = 3$ and $g(5) = 6$. Find a formula for $g(x)$ in terms of x. *Give your answer in exact form.*

$g(x) =$ _____