

2. [7 points] The following parts are unrelated.

a. [4 points]

An invertible function, $g(x)$, has domain and range all real numbers; the following table gives some specific values.

x	-2	-1	-0.3	0	1	2	3
$g(x)$	5	3	1	0	-1	-2	-8

Using this table, write down exact values for the following expressions, or write “not enough information” if there is no way to tell.

- i. $g^{-1}(3)$.
- ii. $2g^{-1}(g(101))$
- iii. $(g(2))^{-1}$.
- iv. $g(g(1))$.

Solution:

- i. $g^{-1}(3) = -1$.
- ii. $2g^{-1}(g(101)) = 202$.
- iii. $(g(2))^{-1} = -1/2$.
- iv. $g(g(1)) = g(-1) = 3$.

b. [3 points] Let $C(t) = e^{t^2+1}$. Find possible functions $A(t)$ and $B(t)$ (with $A(t) \neq t$ and $B(t) \neq t$) such that $A(B(t)) = C(t)$. (Note: there are several possible answers!)

Solution: There are multiple possible correct answers. Here are some possibilities:

- $A(t) = e^t, B(t) = t^2 + 1$.
- $A(t) = e^{t+1}, B(t) = t^2$.
- $A(t) = et, B(t) = e^{t^2}$.