

Sections 8.1 – 8.3

1. (12 points) The functions $f(x)$ and $g(x)$ are defined by the following tables

x	-2	-1	0	1	2	3	4
$f(x)$	4	12	8	2	9	1	0

x	-2	-1	0	1	2	3	4
$g(x)$	-5	-4	-1	4	11	21	40

- a) Is $f(x)$ a one-to-one function? YES NO
- b) $f(g(1)) =$ _____ c) $g(f(-2)) =$ _____
- d) $f(f(4)) =$ _____ e) $g^{-1}(x) = 4$ when $x =$ _____
- f) $g^{-1}(g(11)) =$ _____ g) $f(1) \cdot g(1) =$ _____
- h) $f(-1)/g(-1) =$ _____ i) $f(2)^2 =$ _____

2. (5 points) Let $f(x) = 3x^2 - x + 1$ and $g(x) = 5 - 3x$. Determine simplified formulas for each of the following:

- a. $g(f(x))$. b. $f \circ g(x)$ c. $g \circ g(x)$
- d. $f(x) - g(x)$. e. $g^{-1}(x)$ f. $g(x)^{-1}$

3. Let $f(x) = \log_2(3+x)$. Determine $f^{-1}(x)$

4. Let $g(x) = 5 + e^{3x}$. Determine $g^{-1}(x)$

5. Let $h(x) = 2\sqrt{x}$. Determine $h^{-1}(x)$

6. Circle True or False. If the statement is false, correct it.

True False If $f(g(x)) = g(f(x))$, then $f(x)$ and $g(x)$ must be inverses of each other.

True False Every function has an inverse

True False If $P(3) = 5$, then $P^{-1}(5) = 3$.

7. The stopping distance, $D(s)$, in feet of a car is a function of the speed, s , in miles per hour at which the car was traveling when the brakes were applied.

Interpret $D(30)=55$ using a complete sentence. Your answer must include units.

Interpret $D^{-1}(40)=25$ using a complete sentence. Your answer must include units.