Math 229 – Quiz 1 – Zasada

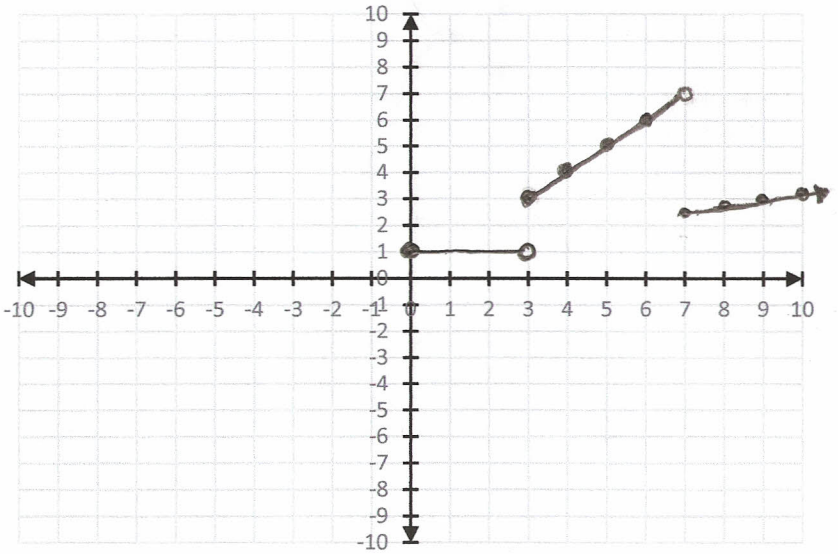
SHORT ANSWER: Write the word or phrase that best complete each statement or answers the question. Show all work. Answers with inadequate work will receive a reduced score.

1) Graph the function:

$$f(x) = \begin{cases} 1, & 0 \le x < 3 \\ |x|, & 3 \le x < 7 \\ \sqrt{x}, & 7 \le x \le 14 \end{cases}$$

$|x|$

X	f(X)
3	3
4	4
5	5
6	6



$\sqrt{x}$

X	f(X)
7	2.6
8	2.8
9	3
10	3.2
11	3.3
12	3.5
13	3.6
14	3.7

2) For the given functions f and g, find the requested composite function value.

$f(x) = 4x + 6,$ $g(x) = 4x^2 + 1;$ Find $(f \circ g)(4)$ $= f(g(4))$

$g(4) = 4(4)^2 + 1$

$g(4) = 65$

$(f \circ g)(4) = f(g(4))$

$= f(65)$

$= 4(65) + 6$

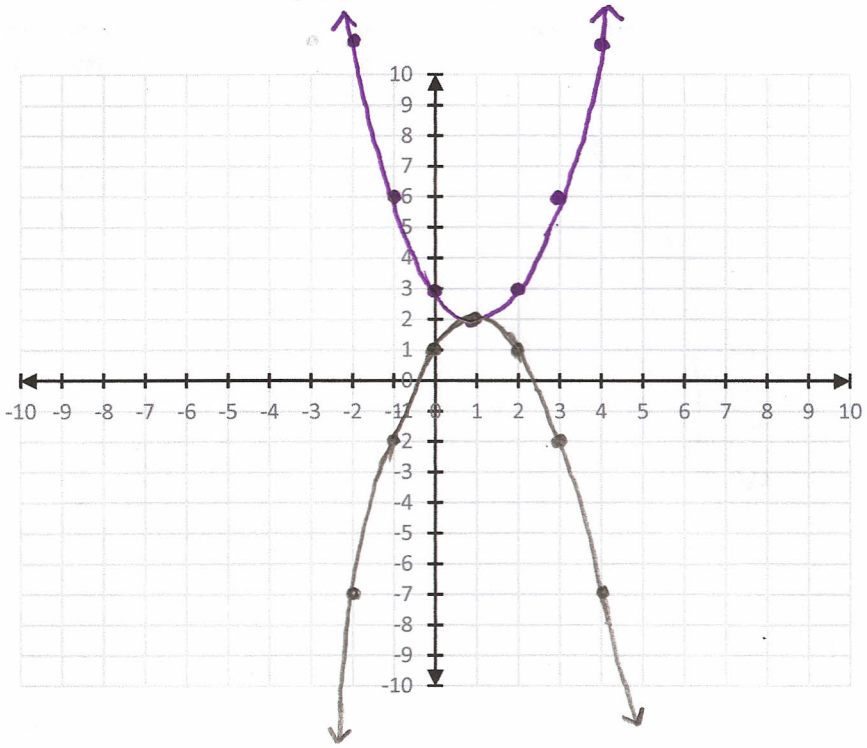
$= \boxed{266}$

3) Graph the function by starting with the graph of the basic function and then using the technique of shifting, compressing, stretching and / or reflecting.

$f(x) = -(x-1)^2 + 2$

$f(x) = -(x-1)^2 + 2$

x	f(x)
-3	-14
-2	-7
-1	-2
0	1
1	2
2	1
3	-2
4	-7



$f(x) = (x-1)^2 + 2$

x	f(x)
-2	11
-1	6
0	3
1	2
2	3
3	6
4	11

4) Find the functions f and g so that $f \circ g = H$.

$H(x) = \sqrt[3]{x+1}$

$g(x) = x+1$

$f(x) = \sqrt[3]{x}$

$(f \circ g)(x) = f(g(x))$

$= f(x+1)$

$= \sqrt[3]{x+1}$

$= H(x)$