3. [12 points] Consider the functions $F(x)$ and $G(x)$ given below. Assume the function $G(x)$ is invertible.
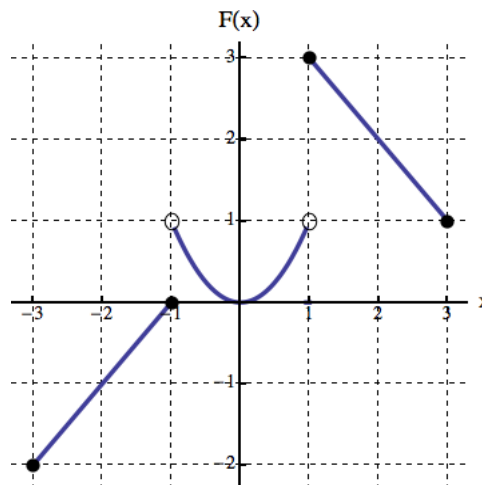
x	-1	0	1	2	3
$G(x)$	-3	-1	0.3	1	2

Compute the following quantities. Write UNDEFINED if the quantity can't be computed with the information provided.

a. [2 points] $G(1)=$_____ $G^{-1}(1)=$_____

b. [2 points] $F(G(2))=$_____ $F(F(-3))=$_____

c. [3 points] Solve the following equations:

$F(a) = 0$ $a=$_____

$G(b) = -3$ $b=$_____.

d. [2 points] If $G(F(x)) = 2$, then $x=$_____.

e. [3 points] Let $R(x)$ be defined as follows

$$R(x) = \begin{cases} 4x^2 & x \le 1 \\ 1 + 2x & x > 1. \end{cases}$$

For $h > 0$, find an expression for $R(1+h) - R(1)$ only in terms of h. No need to simplify.

$R(1 + h) - R(1)=$_____