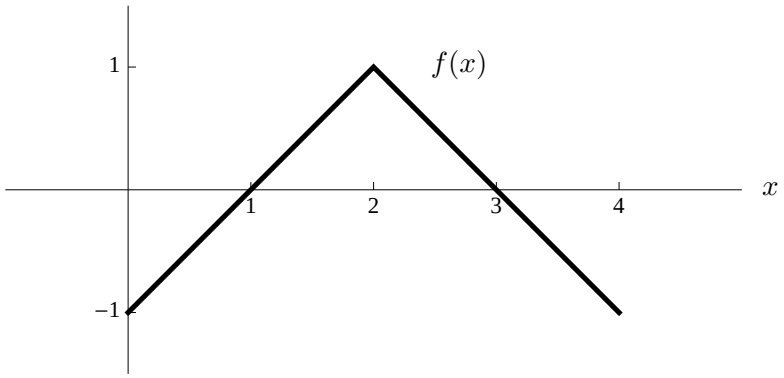
1. [10 points] Suppose $g(x) = x^2$. The graph of a function $f(x)$ is given below. For parts (a)-(c) below, write *all* real numbers z that make the statement true. If no values of z make the statement true, write "NONE". You do not need to show your work.



a. [2 points] $f(g(z)) = 1$.

$z =$ **$-\sqrt{2}, \sqrt{2}$**

Solution: We need $f(z^2)$ to be 1, so we need $z^2 = 2$. The two possibilities are $z = \pm\sqrt{2}$.

b. [2 points] $g(f(z)) = 0$.

$z =$ **1,3**

Solution: We need $f(z)^2$ to be 0, so we need $f(z)$ to be 0. The two possibilities are $z = 1$ or $z = 3$.

c. [2 points] $f(f(z)) = 0$.

$z =$ **2**

Solution: We need $f(z)$ to be 1 or 3. The only possibility is $z = 2$.

d. [4 points] The function $h(x)$ is given by the formula $h(x) = \frac{1}{2}f(x+2) - 1$. On the axes provided below, draw a well-labeled graph of $h(x)$.