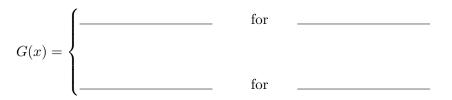
5. [15 points]

a. [6 points] Consider the function

$$F(x) = \begin{cases} x^2 & \text{for} \quad 0 \le x \le 2\\ \\ 7 + \frac{x}{5} & \text{for} \quad 2 < x \le 4. \end{cases}$$

Find a piecewise defined formula for the function G(x) = 3F(x-1).



b. [5 points] Some of the values of the functions H(x), K(x) and J(x) are shown in the tables below

i) The functions J(x) and K(x) are obtained by applying transformations to the function H(x). Find a possible formula for J(x) and K(x). A list of possible answers is shown below. If the answer is not included in the list write your own formula for it in terms of transformations of the function H(x).

$$J(x) = \underbrace{K(x) = \underbrace{K(x-2)}_{H(x-2)+1} + \underbrace{K(x) = \underbrace{K(x+2)}_{H(x+2)+1}_{H(x+2)+1} + \underbrace{H(x+2)}_{H(x+2)+1}_{H(x+2)+1}_{H(x+2)+1}_{H(x+2)+1}$$

ii) Suppose H(x) is an even function, what is the value of H(-3)?

c. [4 points] The graph of a function w = f(z) contains the point (5, -1) and has a horizontal asymptote at w = 2. Let $g(z) = 1 - f(\frac{z}{2} + 3)$. Find a point in the graph g(z) and the equation of its horizontal asymptote.

The graph of g(z) contains the point : _____

Equation of the horizontal asymptote of g(z) at ______