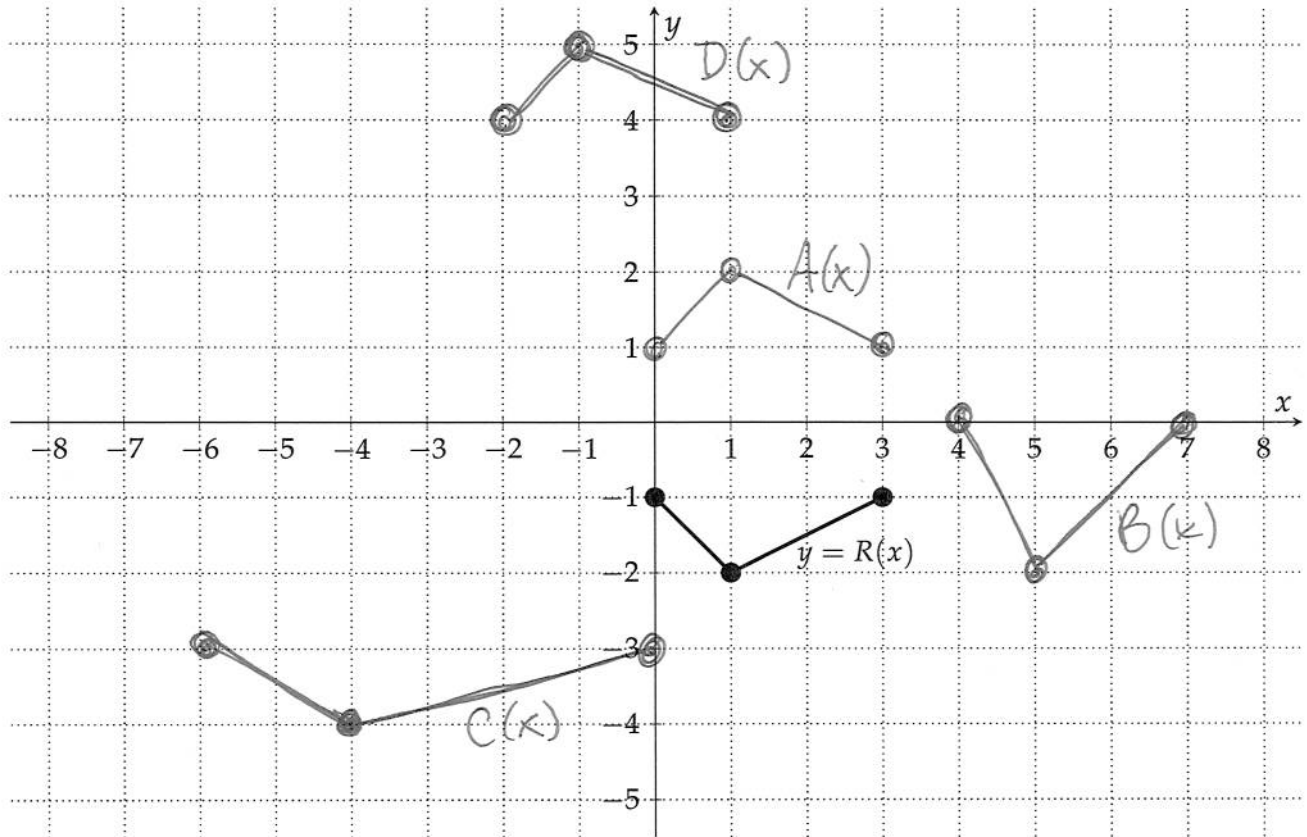**1.** A graph of the function $y = R(x)$ is drawn on the axes below.

What is the **domain** and **range** of the function $R(x)$?

Domain: $[0,3]$ Range: $[-2,-1]$

Draw and label the graphs of the following functions on the provided axes. Then write down their **domain** and **range**.

a) $A(x) = -R(x)$.

Domain: $[0,3]$ Range: $[1,2]$

b) $B(x) = 2R(x-4) + 2$.

Domain: $[4,7]$ Range: $[-2,0]$

c) $C(x) = R(\frac{1}{2}x + 3) - 2$.

Domain: $[-6,0]$ Range: $[-4,-3]$

d) $D(x) = -R(x+2) + 3$.

Domain: $[-2,1]$ Range: $[4,5]$

2. Determine whether the following functions are **even**, **odd**, or **neither**.

a) $f(x) = 4x^5 + 2x$.   Even   (Odd)   Neither

Test:
$$f(-x) = 4(-x)^5 + 2(-x) = -4x^5 - 2x$$
$$= -(4x^5 + 2x) = -f(x)$$

b) $g(x) = 2x^2 + 3$.   (Even)   Odd   Neither

Test:
$$f(-x) = 2(-x)^2 + 3 = 2x^2 + 3 = f(x)$$

c) $h(x) = 4x^3 - 2x^2$.   Even   Odd   (Neither)

Test:
$$f(-x) = 4(-x)^3 - 2(-x)^2 = -4x^3 - 2x^2$$
no nice relation!

3. Describe with complete, English sentences how the graph of the functions below compares to the graph of $y = f(x)$. Be sure to use words like "shifted," "stretched," "compressed," "reflected," "horizontally," and "vertically."

a) $y = 3f(x+2) - 1$

The graph is shifted 2 units horizontally to the left, stretched by a factor of 3 vertically, then shifted down by one unit

b) $y = -f(x) + 5$

The graph is reflected vertically, then shifted up by 5 units.