1 Consider the graph of piecewise function.
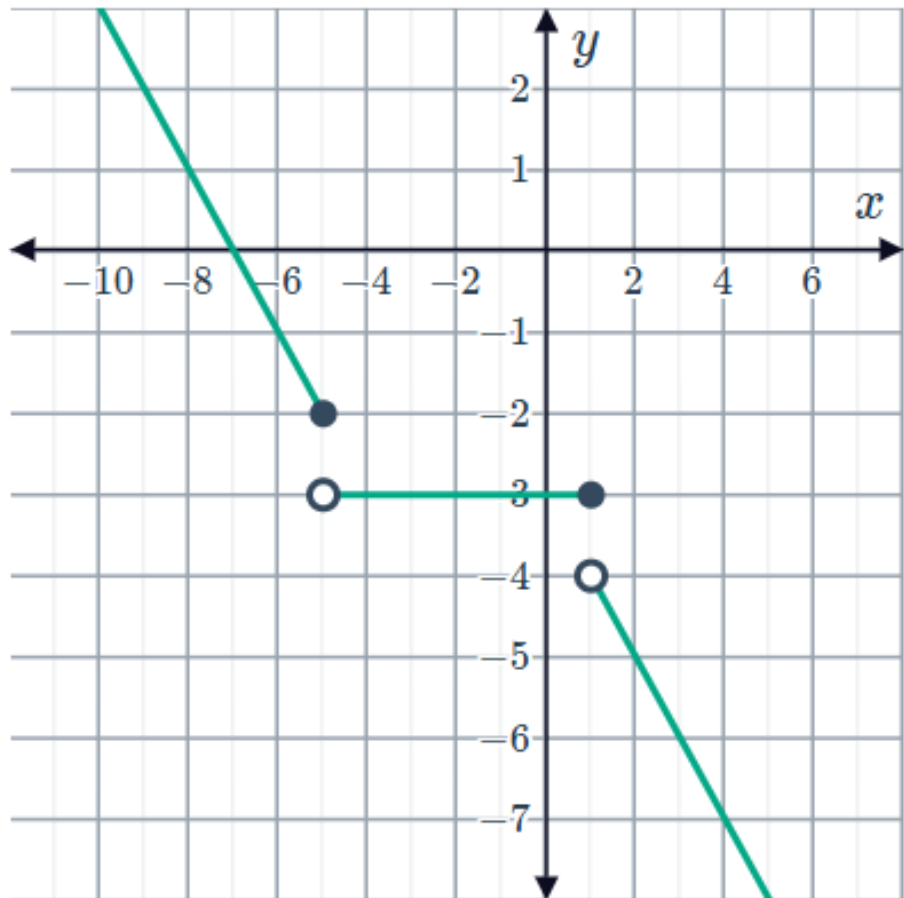Which of these statements are true of the function? Select all that apply

A The function has an x-intercept at $(-7, 0)$

B The function is constant over the interval (-5,1)

C The function is increasing over the interval $(-\infty, -5)$

D The function has a range of $(-\infty, \infty)$

E The function is decreasing over the interval $(-\infty, -5)$ and $(1, \infty)$
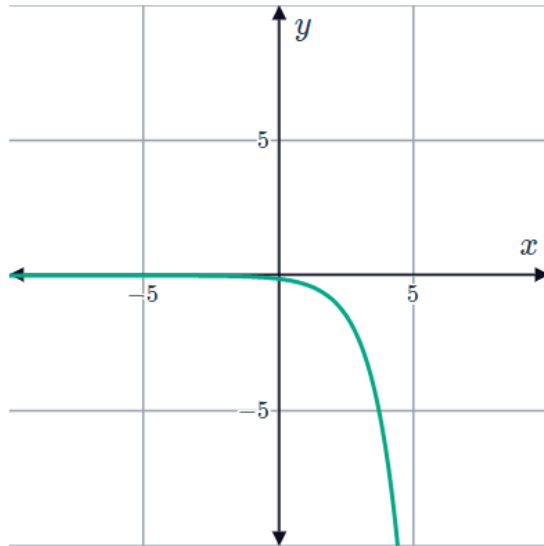
2 In a manufacturing plant, a machine fills cereal boxes with 32 ounces of Krispy Toads cereal. After the boxes are filled, another machine weighs them. If the box's weight differs from the desired 32 ounce weight by more than 0.5 ounces, the container is rejected.

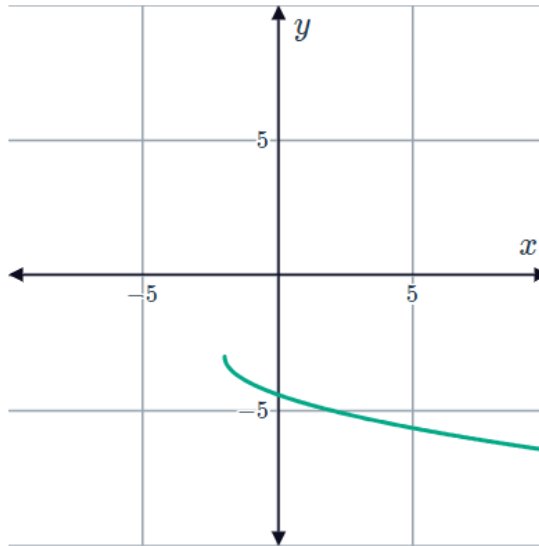A Write an equation that can be used to find the heaviest and lightest acceptable weights for the Krispy Toads boxes.

B Solve the equation and interpret the solution in the given context of the problem.

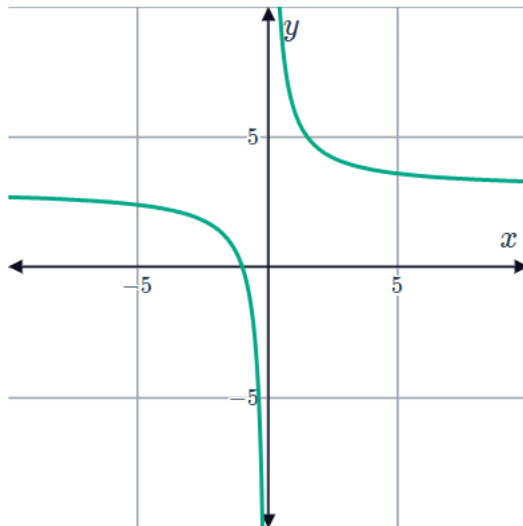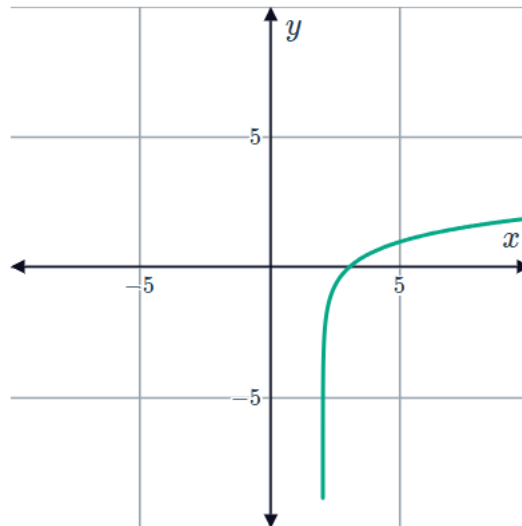**3** Determine which family each of the functions belongs to:
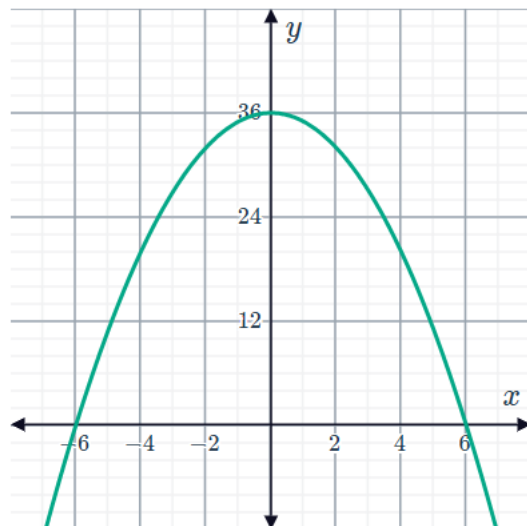
a

b

c

d

A. _____
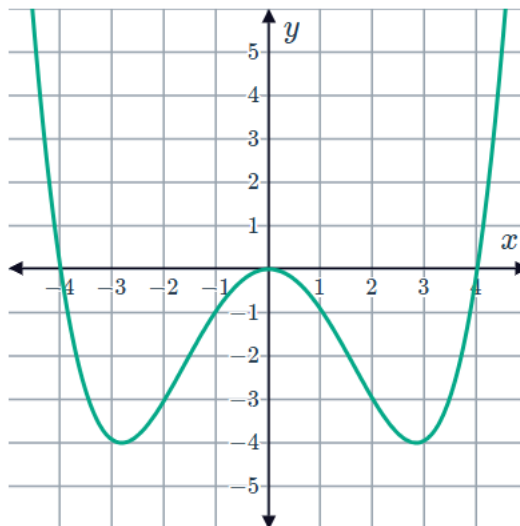
B. _____

C. _____

D. _____

4 For each of the graphs:
I Describe the behavior of the function as $x \to \infty$.

II Describe the behavior of the function as $x \to -\infty$.

a

b

c

d

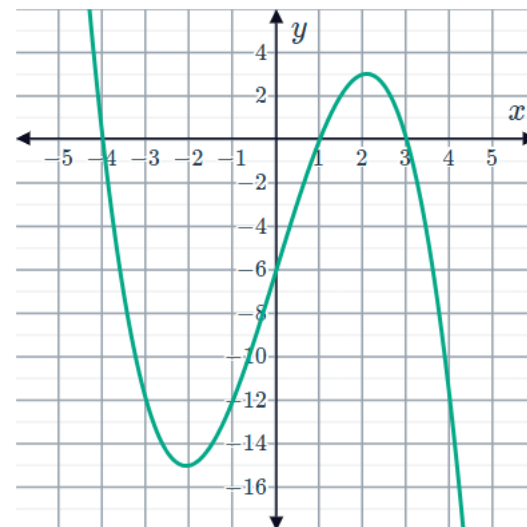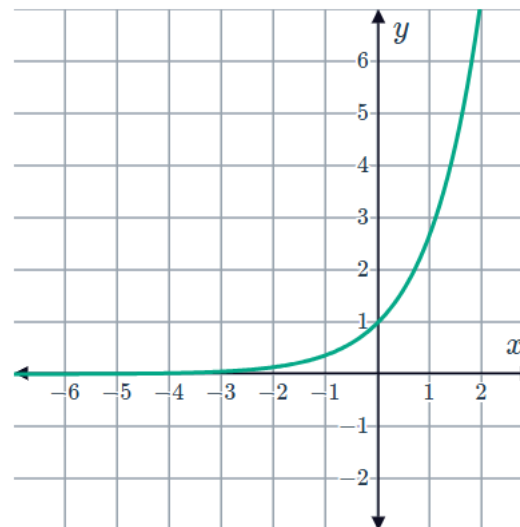**A**

$x \to -\infty, \qquad y \to$ _____

$x \to +\infty, \qquad y \to$ _____

B

$x \to -\infty, \qquad y \to$ _____

$x \to +\infty, \qquad y \to$ _____

C

$x \to -\infty, \qquad y \to$ _____

$x \to +\infty, \qquad y \to$ _____

D

$x \to -\infty, \qquad y \to$ _____

$x \to +\infty, \qquad y \to$ _____

5 Consider the function shown in the graph:

A State the domain. _____

B State the range. _____

6 The function $f(x) = \sqrt{x+1}$ has been graphed.

A State the domain of the function. Express as an inequality.

_____

B Is there a value in the domain that can produce a function value of -2 ?

_____

7

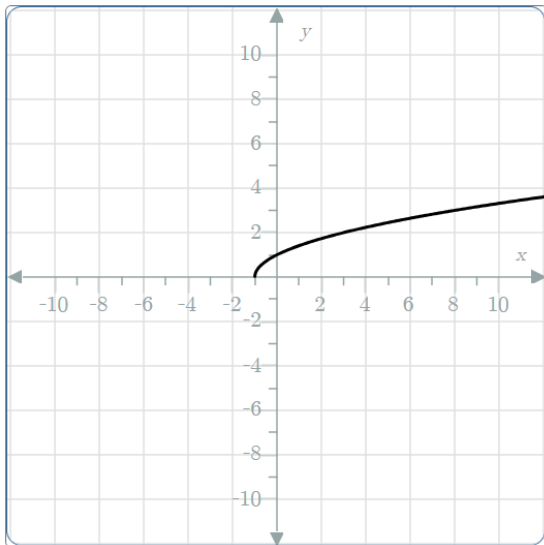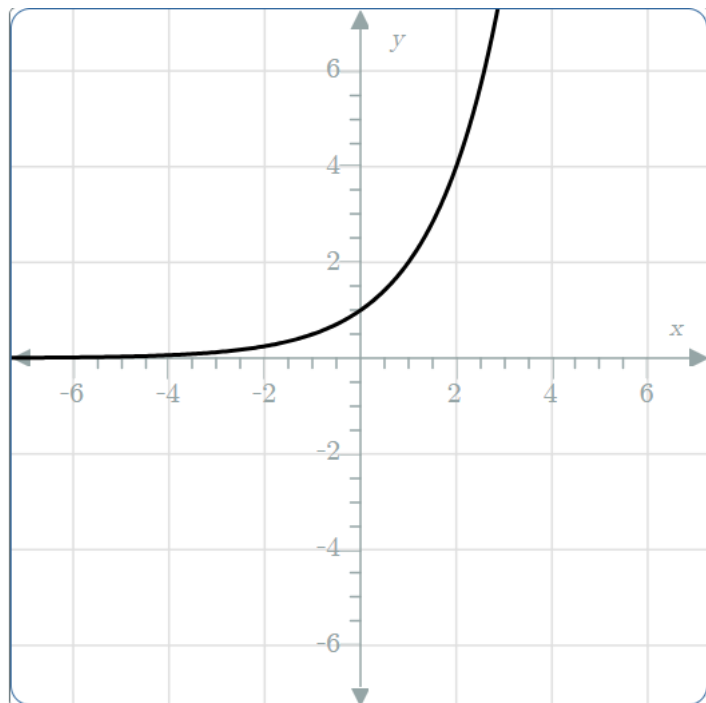The graph of $y = 2^x$ is displayed here.

A. What is the y-intercept of this graph?_____

B. Does the graph have an x-intercept?_____

C. Which single option below gives us the graph's domain?

$A \ x \geq 0$ $B \ x > 0$ $C \ x < 0$ $D \ all \ real$

D. What is the graph's range?

$A \ y \geq 0$ $B \ y > 0$ $C \ y < 0$ $D \ all \ real$

E. Find the value of y when $x = 7$. _____

F. Find the value of x when $y = 256$._____

8 A graph of the function $y = \log_{\frac{x}{2}} + 5$ is shown below.

A State the equation of the vertical asymptote of $y = \log_{\frac{x}{2}} + 5$.

_____

B State the domain of the function, using interval notation.

_____

C State the range of the function, using interval notation.

_____

9 A graph of the function $y = \log_2^{(x+3)}$ is shown below.

A State the equation of the vertical asymptote of $y = \log_2^{(x+3)}$.

_____

B State the domain of the function, using interval notation.

_____

C State the range of the function, using interval notation.

_____

10 A graph of the function $y = \log_2^{(x-5)}$ is shown below.

A State the equation of the vertical asymptote of $y = \log_2^{(x-5)}$.

_____

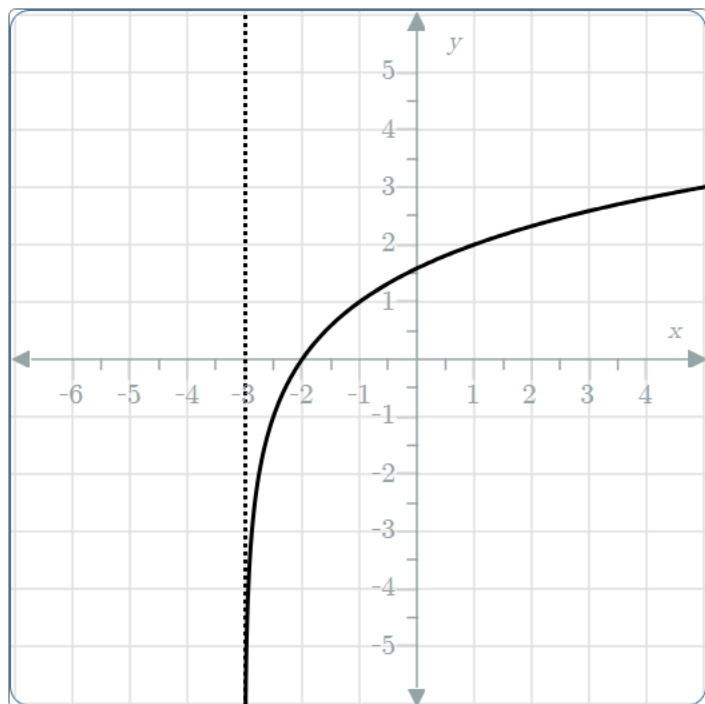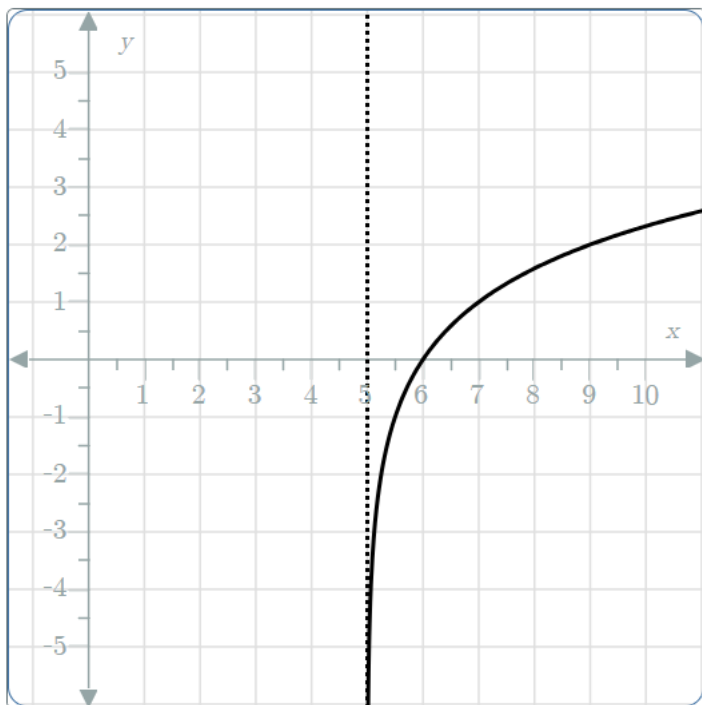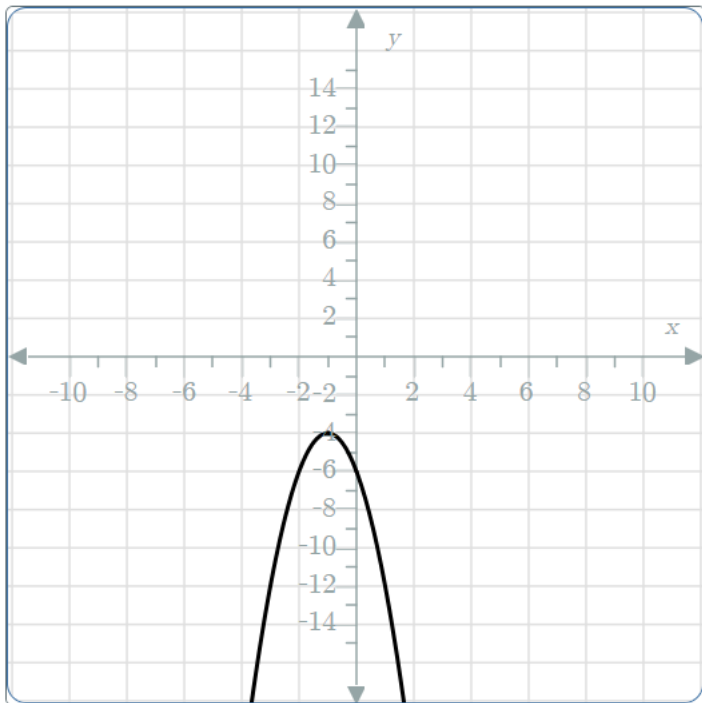**B** State the domain of the function, using interval notation.

_____

C State the range of the function, using interval notation.

_____

11 Consider the function $f(x) = -2(x + 1)^2 - 4$ drawn below.

A What is the region of the domain where $f(x)$ is increasing? Write the answer in interval notation.
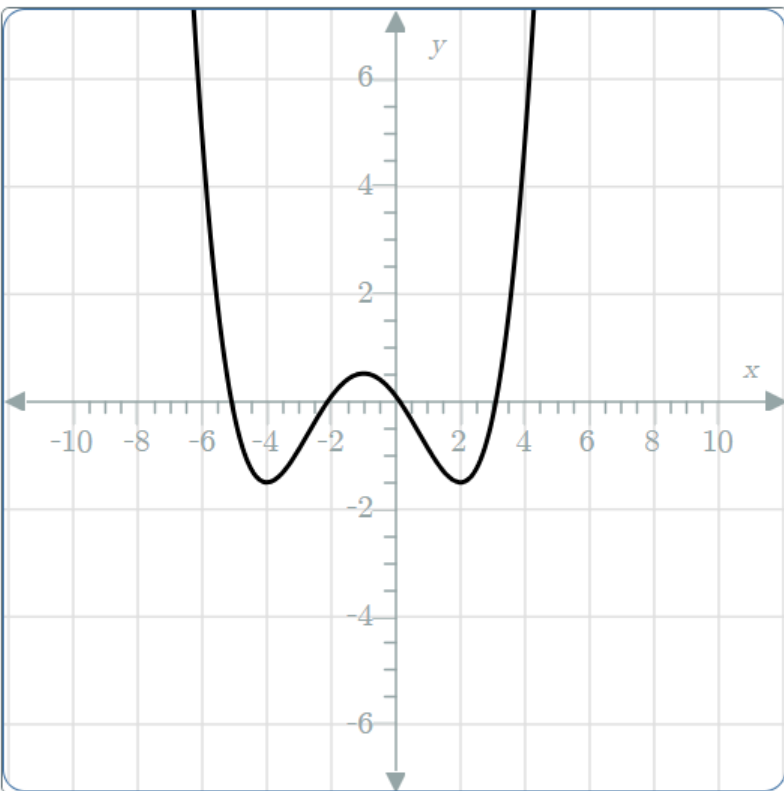
_____

B What is the region of the domain where $f(x)$ is decreasing? Write the answer in interval notation.

_____

12 Consider the graph of the quartic function, $f(x)$, graphed below.

A What are the regions of the domain where $f(x)$ is increasing? Write all of the regions in interval notation separated by commas.

_____

B What are the regions of the domain where $f(x)$ is decreasing? Write all of the regions in interval notation separated by commas.

_____

13 Consider the function $g(x) = -(x - 3)^2(x + 3)^2$ drawn below.

A What are the regions of the domain where $f(x)$ is increasing? Write all of the regions in interval notation separated by commas.
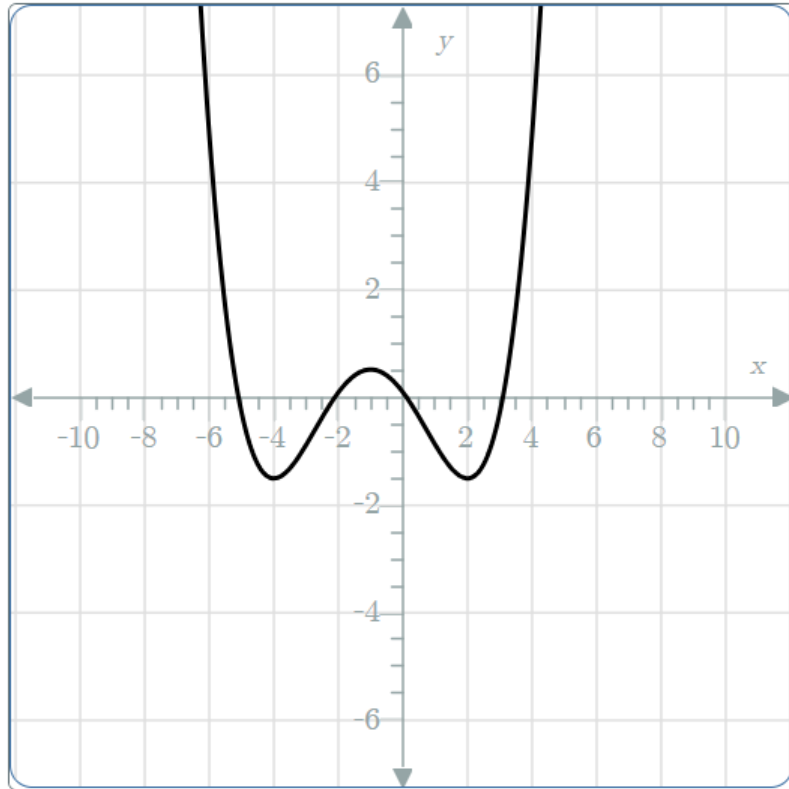
_____

B What are the regions of the domain where $f(x)$ is decreasing? Write all of the regions in interval notation separated by commas.

_____

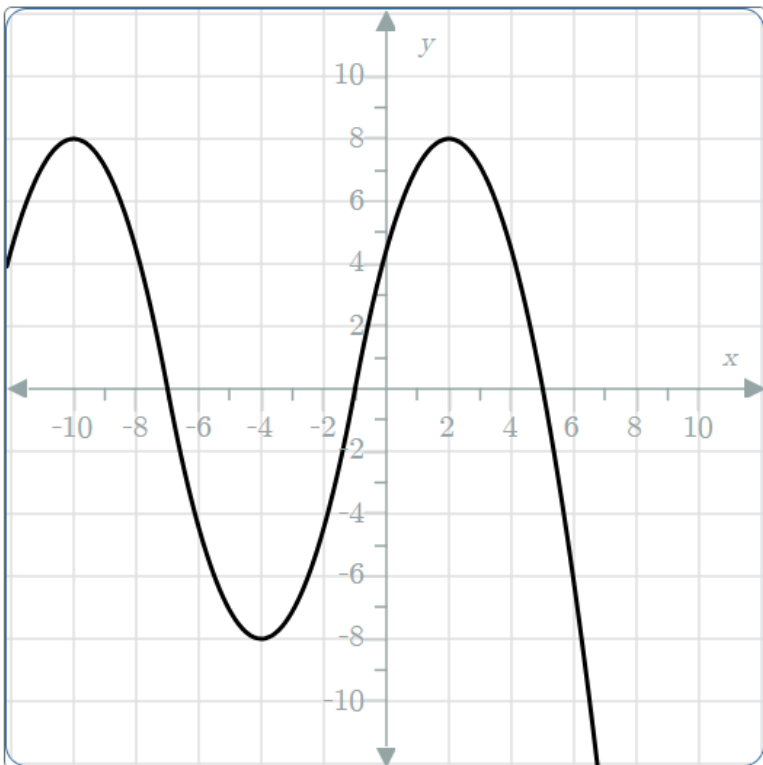**14** Consider the function f(x) shown in the graph below.

A What are the regions of the domain where $f(x)$ is increasing? Write all of the regions in interval notation separated by commas.

_____

B What are the regions of the domain where $f(x)$ is decreasing? Write all of the regions in interval notation separated by commas.

_____

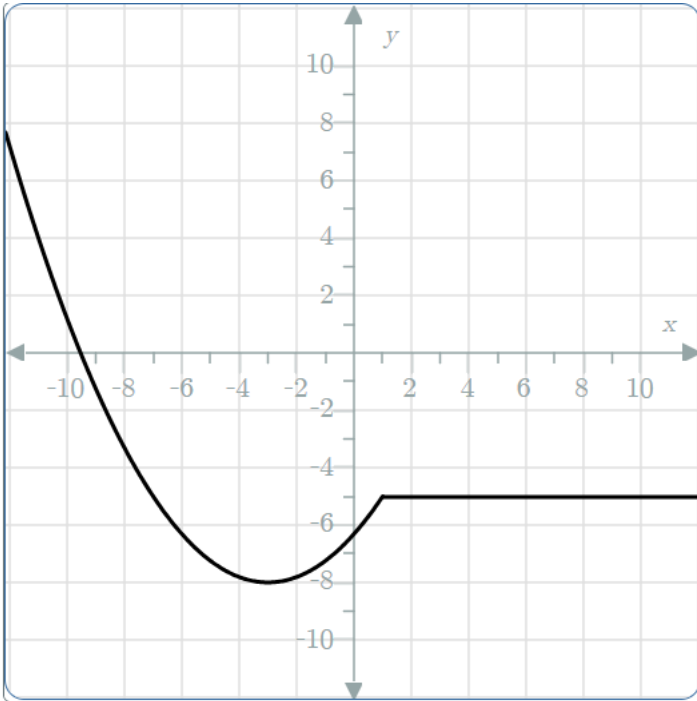**15** Consider the function f(x) shown in the graph below.

A Over what region in the domain is $f(x)$ constant?

Write the region in interval notation.

_____

B What are the regions of the domain where $f(x)$ is increasing?
Write all of the regions in interval notation separated by commas.

_____

C What are the regions of the domain where $f(x)$ is decreasing?
Write all of the regions in interval notation separated by commas.

_____