

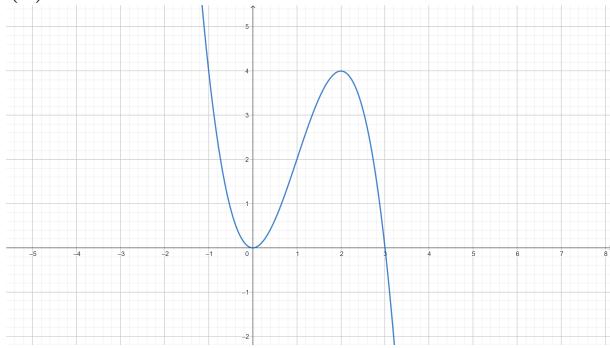
Name:
Result:
Group B

1.

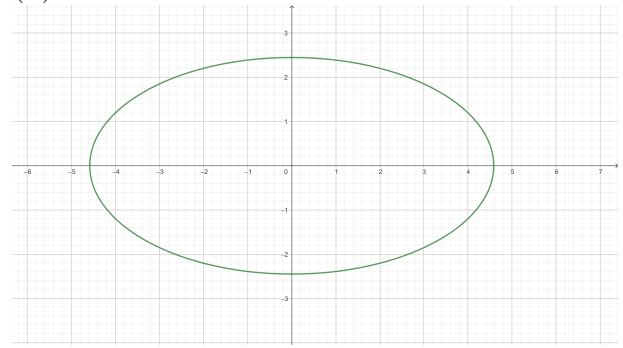
(2 points)

Decide if the graphs below are graphs of functions. You must justify your answer. Answers without justification will earn no marks.

(a)

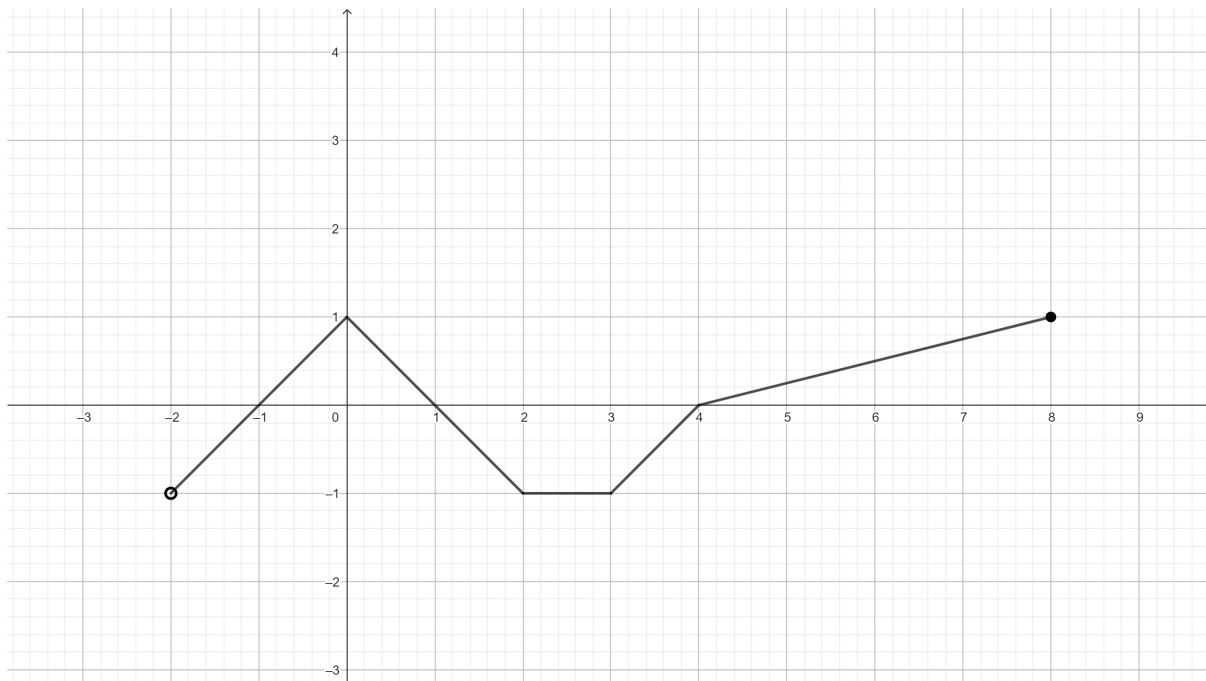


(b)



2.*(6 points)*

The following diagram shows the graph of the function $f(x)$.



(a) State the domain and range of $f(x)$.

(b) Write down the zeroes of $f(x)$.

(c) For what values of x is the function:

(i) negative,

(ii) decreasing?

(d) For how many values of x :

(i) $f(x) = 2$,

(ii) $f(x) = -\frac{1}{2}$?

3.*(6 points)*

Find the largest possible domain for the following functions:

(a) $f(x) = \sqrt{3-x} + \frac{2}{x+5}$

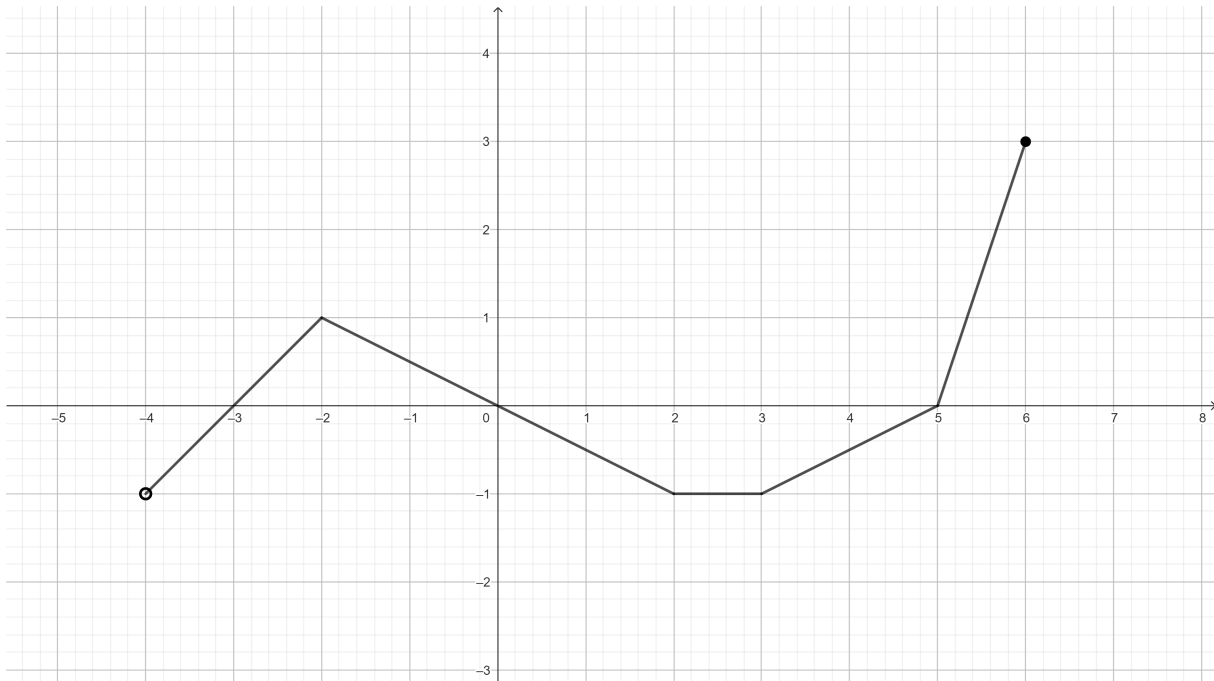
(b) $f(x) = x^2 + 7 - \sqrt{2x+8} + \frac{1}{\sqrt{1-x}}$

4.

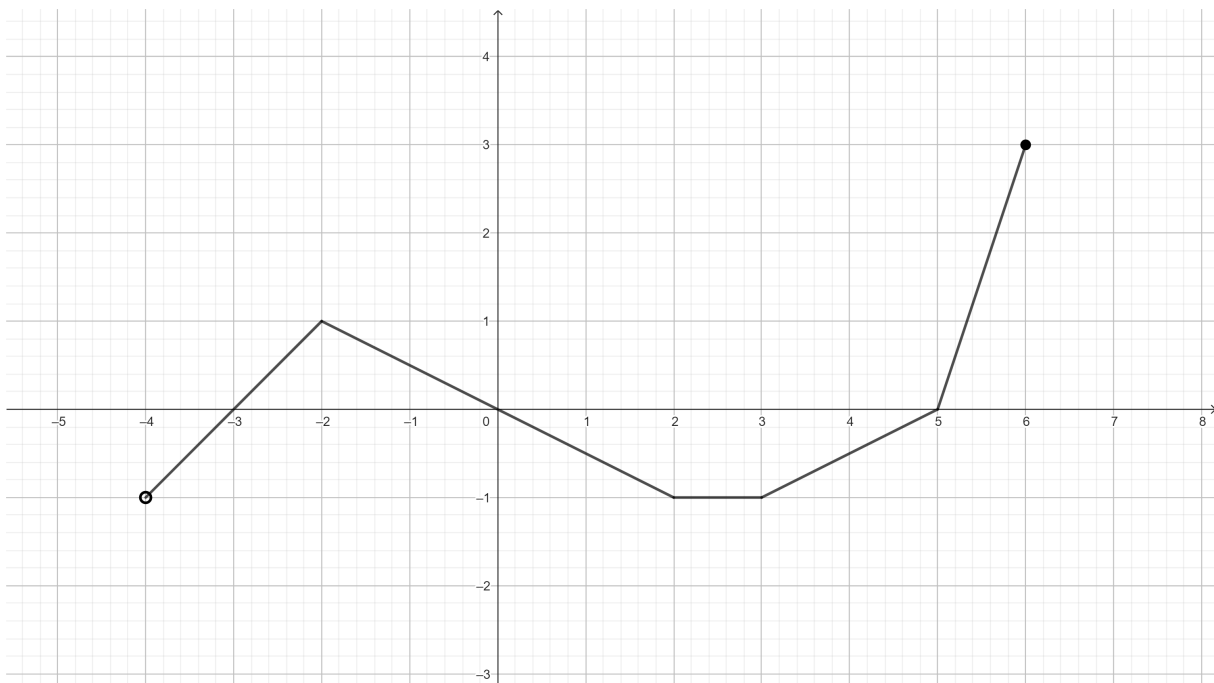
(9 points)

The following diagrams show the graph of the function $f(x)$. Use the diagrams to sketch:

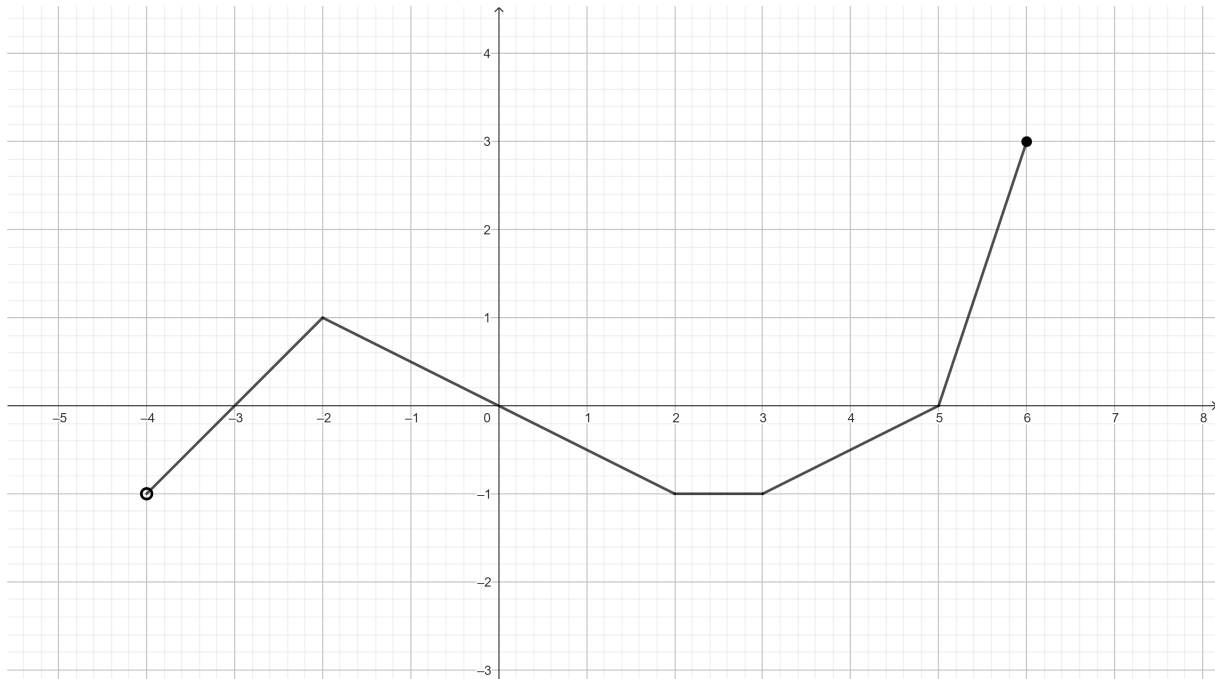
(a) $-f(x + 1) - 2$



(b) $|f(2x)|$



(c) $f(|1 - x|)$



5.*(12 points)*

In each case write down a sequence of transformation that transforms the graph of $f(x)$ into the graph of $g(x)$:

(a) $f(x) = \sqrt{x}$ $g(x) = 3 - 2\sqrt{x+3}$

(b) $f(x) = x^2$ $g(x) = 2x^2 + 12x + 3$

(c) $f(x) = \frac{1}{x}$ $g(x) = \frac{3x-7}{x-2}$

(d) $f(x) = 2^x$ $g(x) = 5 + 2^{1-2x}$

6.*(9 points)*

Consider the function $f(x) = \frac{1}{3}x^3 - x^2 - 2x + 1$. Use the GDC to find:

- (a) The zeroes of $f(x)$,
- (b) The value of $f(2.1)$,
- (c) The coordinates of local maximum of $f(x)$,
- (d) The values of x for which the function is decreasing,
- (e) The coordinates of the points of intersection of the graph of $f(x)$ with $y = x - 3$.

7.*(6 points)*

Use the graphs on your GDC to solve the following equations:

(a) $x^2 - 2 = \frac{1}{x - 3}$

(b) $\sqrt{x} = |x - 2|$

(c) $2^x = 3 - x^2$