Name:
Result:
Group A

1. *(6 points)*

Let $f(x) = \frac{1}{3}x^3 + x^2 - x + 2$.

(a) Find:

(i) the y-intercept,

(ii) the x-intercept,

(iii) the coordinates of the local maximum and local minimum,

(iv) the values of x for which the function is decreasing.

Let $g(x) = x + 6$. Find the coordinates of the points of intersection of the graphs of $f(x)$ and $g(x)$.

2. *(3 points)*

For each of the following examples state the transformation that needs to be applied to transform the graph of $f(x)$ into the graph of $g(x)$:

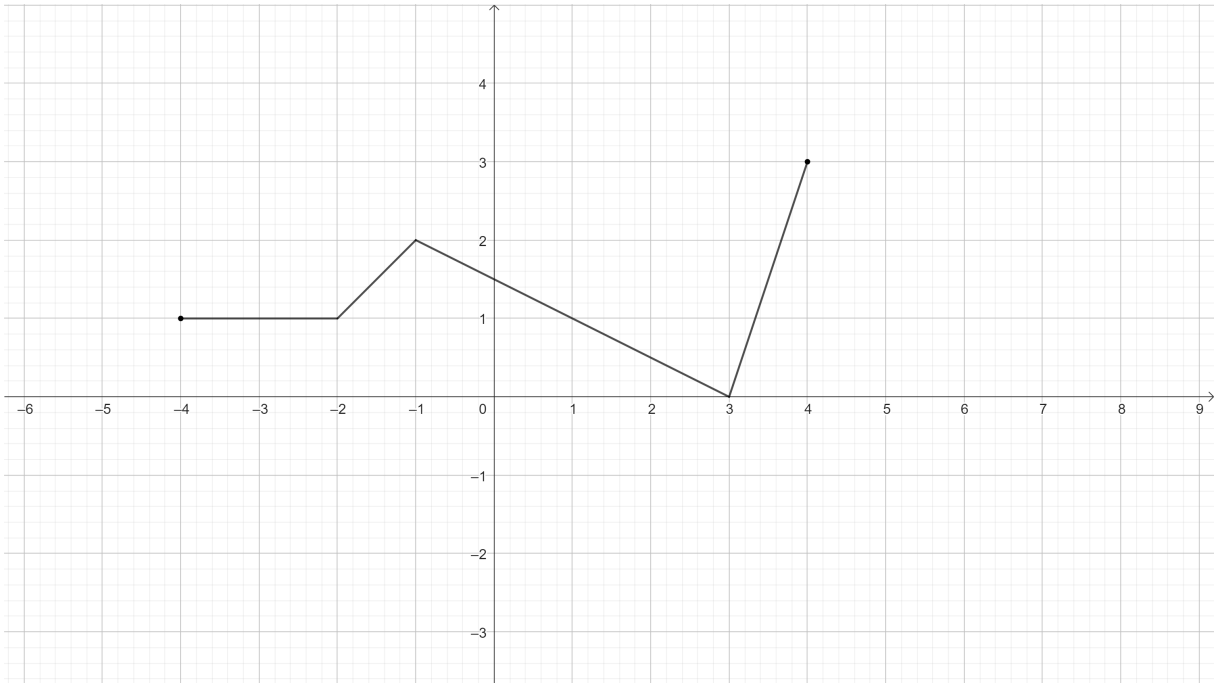
(a) $f(x) = \dfrac{1}{x}$ $\quad g(x) = \dfrac{1}{x+3}$

(b) $f(x) = x^3$ $\quad g(x) = x^3 - 2$

(c) $f(x) = \sqrt{x}$ $\quad g(x) = \sqrt{x-2} + 1$

3. *(7 points)*

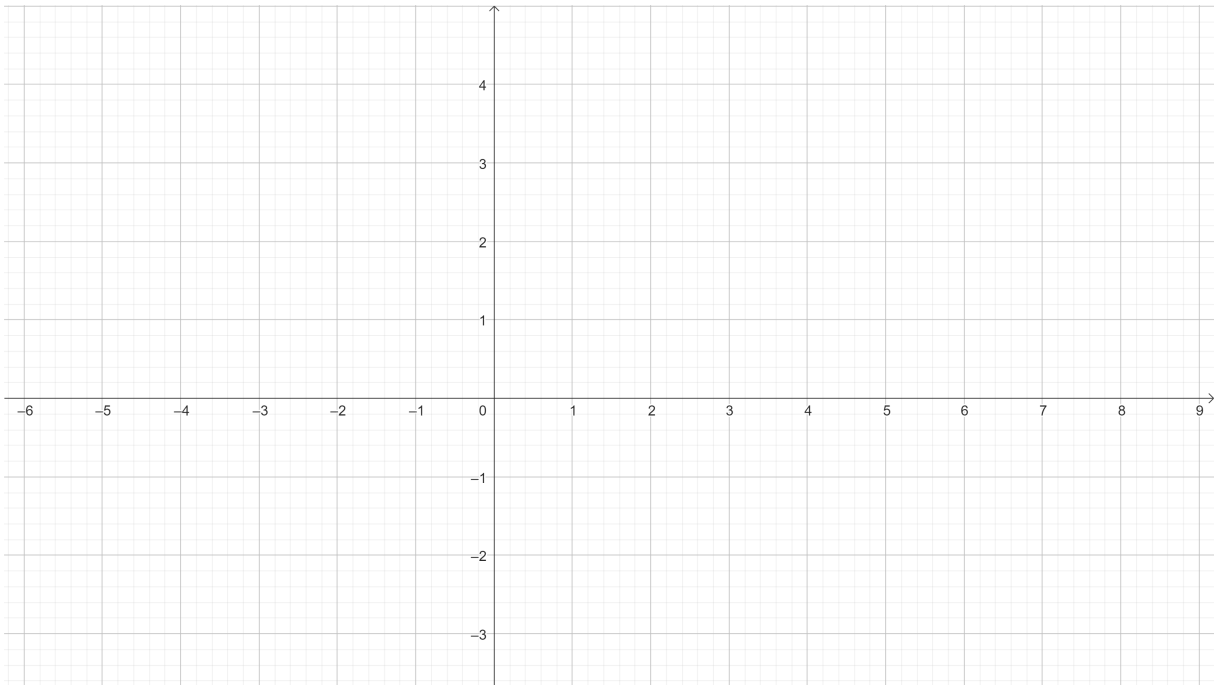
The graph of $f(x)$ is shown below:



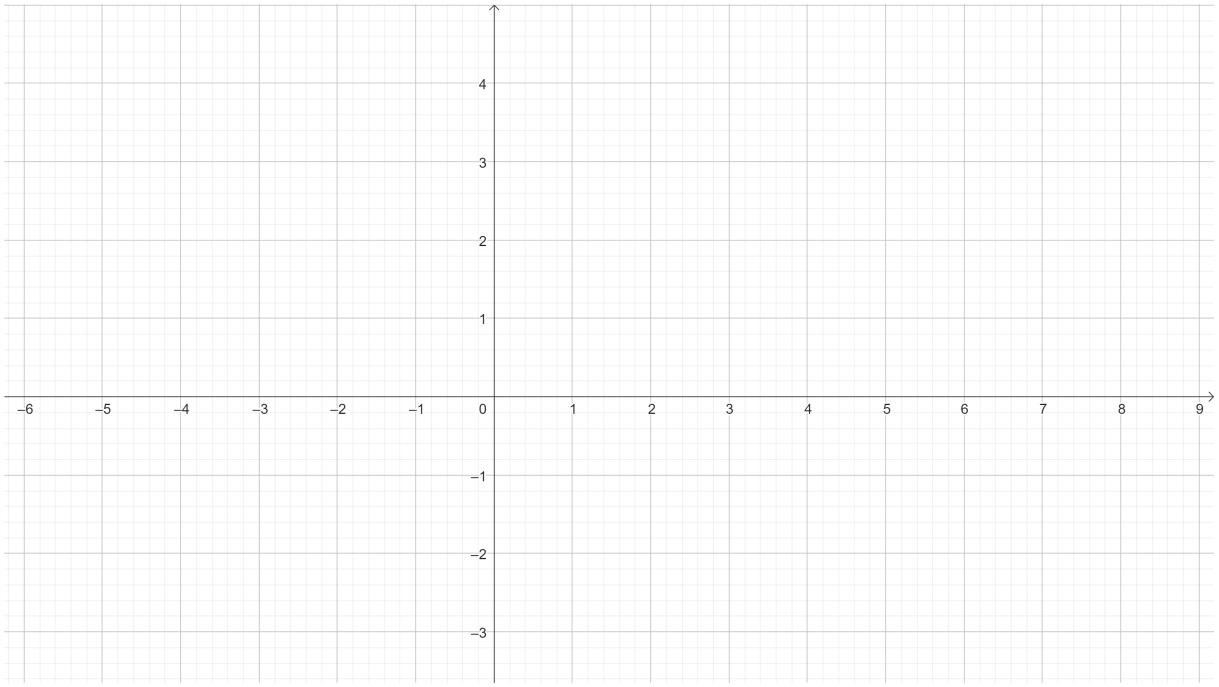
(a) Write down the domain and range of $f(x)$.

On the following set of axes draw and in each case specify the new domain and range.

(b) $f(x) - 2$



(c) $f(x-3)$



(d) $f(x+2)+1$