PART A

1. Write $\{x \in R \mid -4 < x \leq 5\}$ in interval notation. **(1M)**

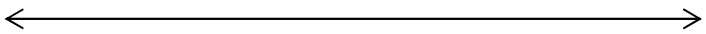
2. State the domain and range of the function $f(x) = |x| + 1$. **(1M)**

3. The statement $(-2)\left(-\frac{1}{2}\right) = 1$ is an example of which property of real numbers?

(1M)

4. If $f(x) = x - 3$ and $g(x) = x^2 - 6$, write the equation of $g \circ f(x)$. **(1M)**

5. Solve $2x - 3 > 4x + 5$ for $x \in Z$. Show your solution on the included number line. **(1M)**



6. Determine the equation of $\frac{f(x)}{g(x)}$ if $f(x) = x^2$ and $g(x) = 2 - x$ and state the restriction(s) upon x.

(1M)

7. If $f(x) = \lfloor x \rfloor$ and $g(x) = \lfloor 2 + x \rfloor - 1$, then describe in words the transformations of $f(x)$ that produced the equation for $g(x)$.

(1M)

8. Write, in point-slope form, the equations of the line of slope of 8 passing through (-3,6).

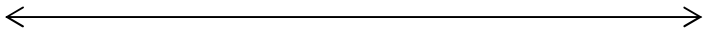
(1M)

9. If $h(x) = -\frac{2}{3}x + 1$, determine the equation for $h^{-1}(x)$. **(1M)**

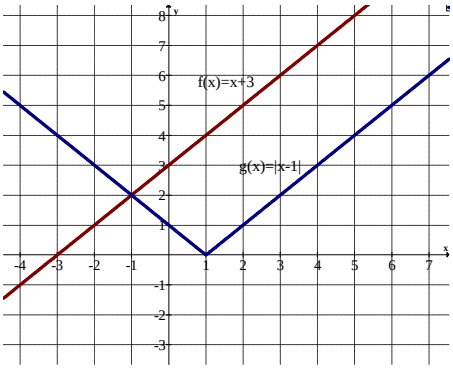
10. Solve $|x-2|+1=3$.

(2M)

11. From the inequality statements $2x \geq 6$ and $x+1<10$ where $x \in R$, draw the solution set for x on a number line and state the solution set in interval notation. **(2M)**



12. From the graph on the right, state the solution for $x+3>|x+1|$. **(2M)**



13. Solve for y in the equation $x=\frac{ky-1}{y}$. **(2M)**

14. If $f(x)=|x-4|$ and $g(x)=\lceil x \rceil+2$, evaluate $g \circ f(-3.25)$. **(2M)**

15. A relation is given as follows: $\{(4,3),(5,3),(7,-1),(8,2),(-2,4),(4,2),(-1.5,5),(\pi,3)\}$. State the domain and range and explain whether the relation is or is not a function. **(2M)**

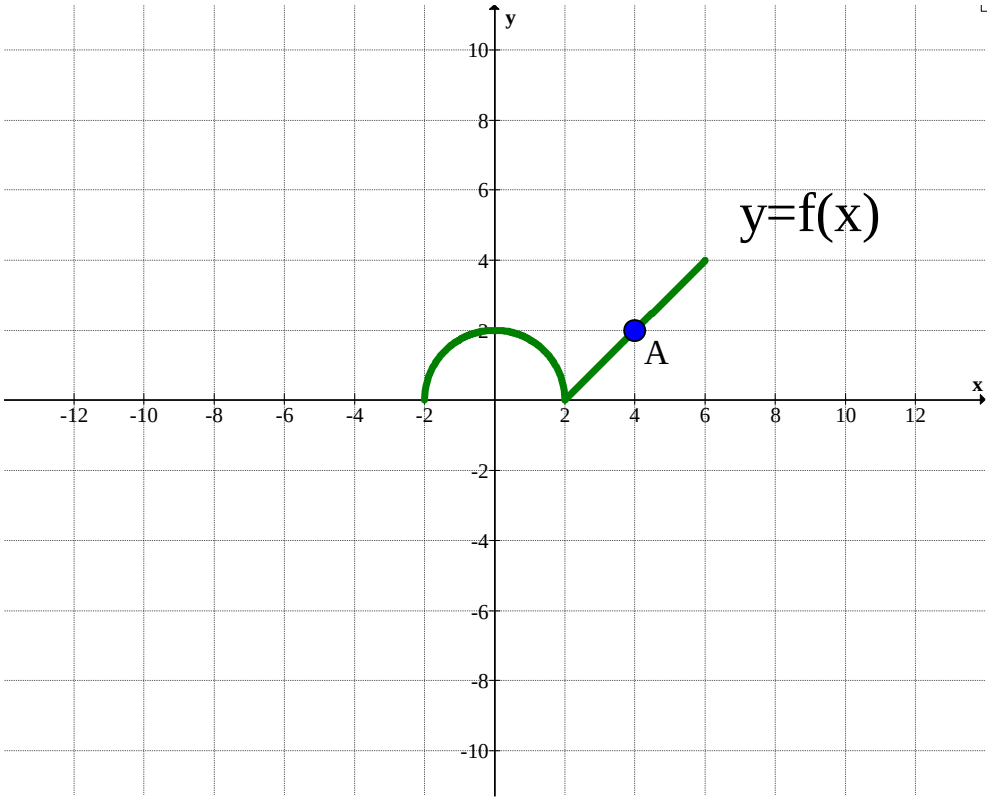
PART B

1. You will work with the function $y = f(x)$ which is graphed below. (8M)

(a) If $g(x)$ is defined as $g(x) = -f\left(\frac{1}{2}(x+2)\right)+6$, describe how $f(x)$ has been transformed.

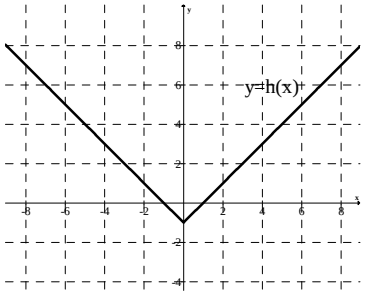
(b) The point $A(4,2)$ is on $y = f(x)$. After $f(x)$ has been transformed, where is point A now located?

(c) Graph $g(x) = -f\left(\frac{1}{2}(x+2)\right)+6$ on the same grid.

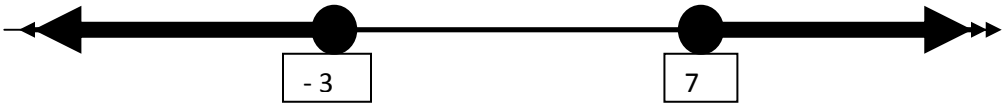


2. From the graph of the given functions, answer the following questions: (8M)

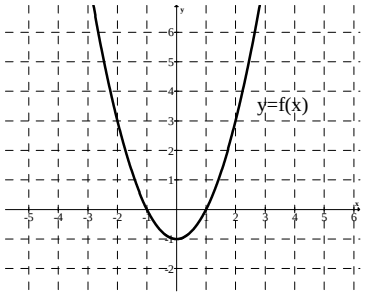
(a) State the domain and range of $y = -2h(x+k)$.



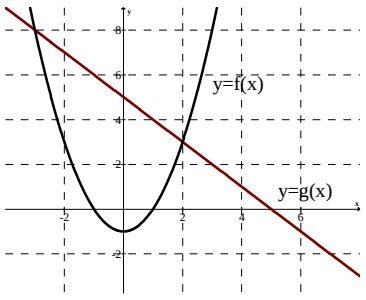
(b) Write an inequality with absolute value that produces the following solution set.



(c) Use the graph to solve the inequality $f(x) > 0$ and state your answer in set notation.

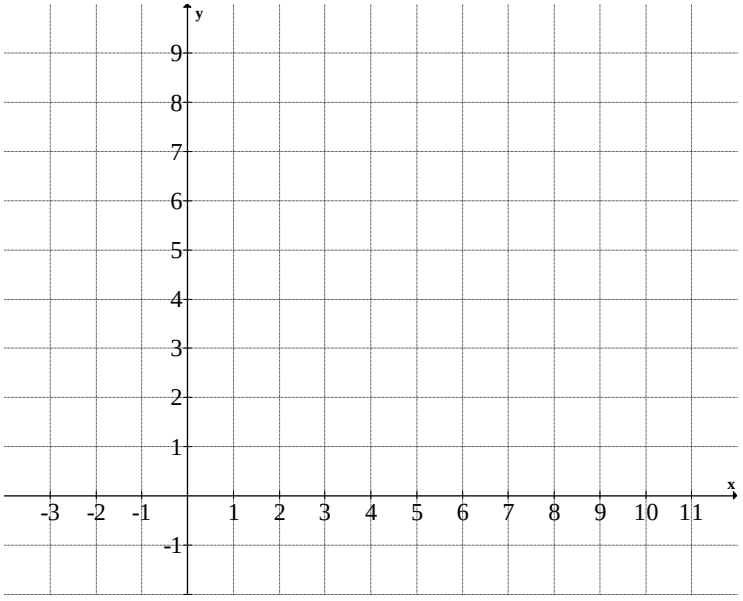


(d) Evaluate $g \circ f(2)$, given the graphs of the 2 functions below. Show/explain your solution.



3. You will use $f(x)=x^2$ and $g(x)=2x-4$ to answer the next 2 questions: (8M)

(a) Graph $y=k(x)$ if $k(x)=\begin{cases}|g(x)| & \text{if } x<4\\ f^{-1}(x) & \text{if } x\geq 4\end{cases}$ on the grid provided.



(b) The graph of the function $y=k(x)$ shows a discontinuity at x = 4. Given the graph you have just completed, give a definition for continuity of a function.

4. A linear function, $y = f(x)$, goes through the points A(-2,3) and B(6,27). Answer the following questions that involve the linear function, $y = f(x)$ (8M)

(a) Solve and verify $|f(x)| = 1 - x$.

(b) Solve the equation $f^{-1}(x) = f\left(-\frac{1}{3}x\right)$.

5. Solve and verify $|3x+1|+1=4x$

6. Solve and verify $|2x+1| \leq 7-x$. Show the solution set on a number line and express in interval notation.

PART C

7. Draw the graph of $|x|+|y|=1$