Content	Comm	Overall
36	4	40

MCR3U - Unit 2 - Transformations of Functions
PRACTICE TEST (FROM Fall 2025)

Name:_____

Complete and well presented solutions are required for full marks unless stated otherwise.

1. Fill in the blanks for each of the following. You do not need to show your work. [5]

a) Given $f(x)=-(x-5)^2+8$, state the interval of increase _____.

b) Write the equation of the transformed function if $f(x)=|x|$ is vertically stretched by a factor of 4, horizontally compressed by a factor of 3, reflected over the y-axis, vertically translated 5 units up and horizontally translated 1 unit to the right. _____

c) A restriction that could be placed on the domain of $f(x)=4(x-2)^2+1$ so that its inverse remains a function is: _____

d) If $f(x)=(x-1)^3-5$, the range of $f^{-1}(x)$ is _____.

e) Given $f(x)=2x^3+1$, state the simplified equation of $g(x)=-f(x)$ _____

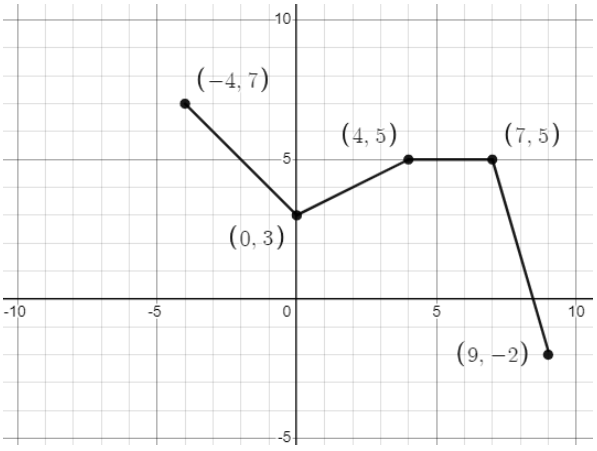
2. Given $f(x)=-2(x-5)^2$, determine the invariant points, given the following transformations. [2]

$g(x)=2f(x)$	$g(x)=f(-x)$

3. Find the inverse of each of the following. [4]

a) $f(x)=\dfrac{-3}{x-2}-5$

b)



4. Fully **simplify** the following expressions and **state the restrictions**. [3,3,4]

a) $\frac{12x^5y^7}{7x^{10}y^8} \div \frac{4xy^5}{21y^4}$

b) $\frac{4x+12}{x-5} \cdot \frac{x^2+x-20}{x^2-x-12}$

c) $\frac{x^2+2x-3}{2x^2+7x+6} - \frac{(x-1)(2x-3)}{4x^2-9}$

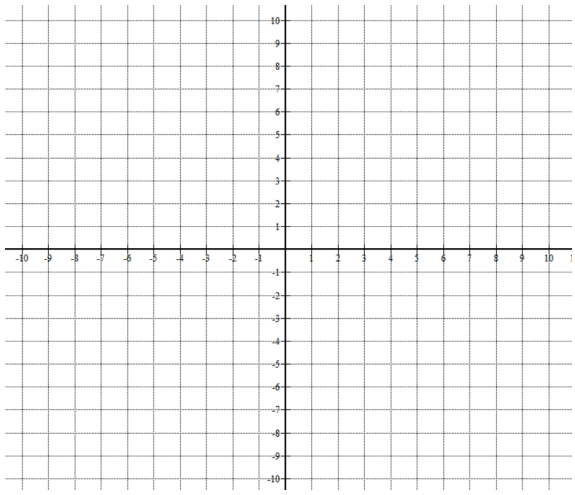
5. Using the base function $f(x)$ and the transformed function $g(x)=f(-4(x+1))+2$: [3]

a) State the transformations, in order, that need to be applied to $f(x)$ to graph $g(x)$.

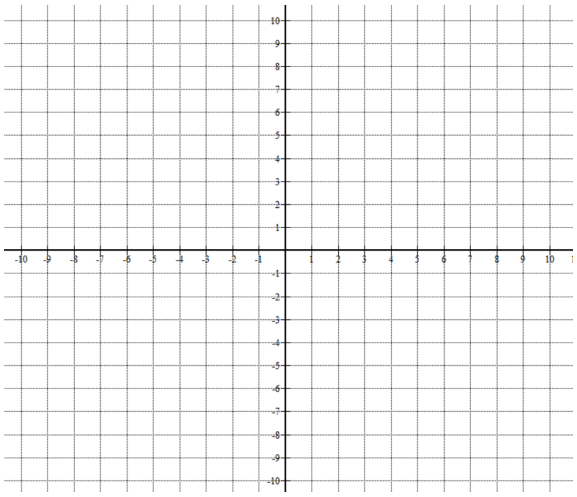
b) Write the equation for the transformed function if $f(x)=\sqrt{x}$.

6. **Graph** the following functions using mapping notation. Be sure to show as many accurate points as possible. [12]

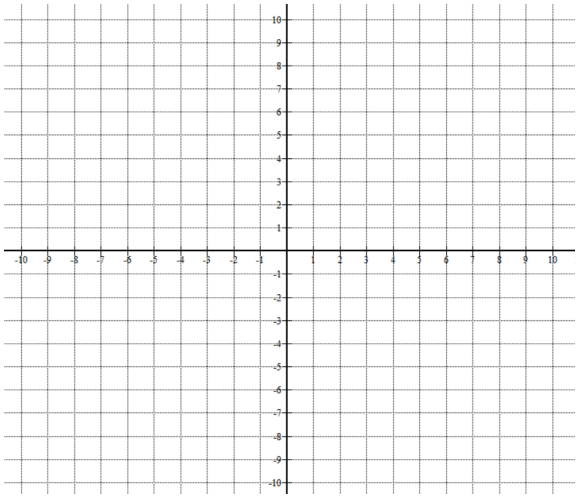
a) $f(x)=2|x-3|$



b) $f(x)=-3\sqrt{x+4}$



b) $f(x)=\left(\frac{-1}{3}x+2\right)^3-1$



c) $f(x)=4\left(\frac{1}{x-5}\right)+3$