MCR3U – Extra Unit 2 Review Solutions

1. Simplify and state restrictions.

a) $\frac{3(x+4)}{5x} \times \frac{25x^3(2-x)^2}{12(2-x)^5}$

b) $\frac{3x+2}{4x^2-1} + \frac{2x-5}{4x^2+4x+1}$

c) $\frac{10x^2+3xy-y^2}{9x^2-y^2} \div \frac{6x^2+3xy}{12x+4y}$

a) $\frac{5x^2(x+4)}{4(2-x)^3}, x \neq 0, 2$

b) $\frac{10x^2-5x+7}{(2x-1)(2x+1)^2}, x \neq \pm\frac{1}{2}$

c) $\frac{4(5x-y)}{3x(3x-y)}, x \neq \frac{-1}{2}y, \pm\frac{1}{3}y, 0$

2. Given that $p(x) = \frac{1}{2}(4-x)^3$, graph $p(x)$ and $p^{-1}(x)$.

$p(x) = \frac{1}{2}(-x+4)^3$

$= \frac{1}{2}[-(x-4)]^3$

base fn: $y = x^3$

transformations:

V.C. of 2

refl. in y-axis

shift rt. 4

$(x, y) \rightarrow (-x+4, \frac{y}{2})$

$(0, 0) \rightarrow (4, 0)$

$(-1, -1) \rightarrow (5, -\frac{1}{2})$

$(-2, -8) \rightarrow (6, -4)$

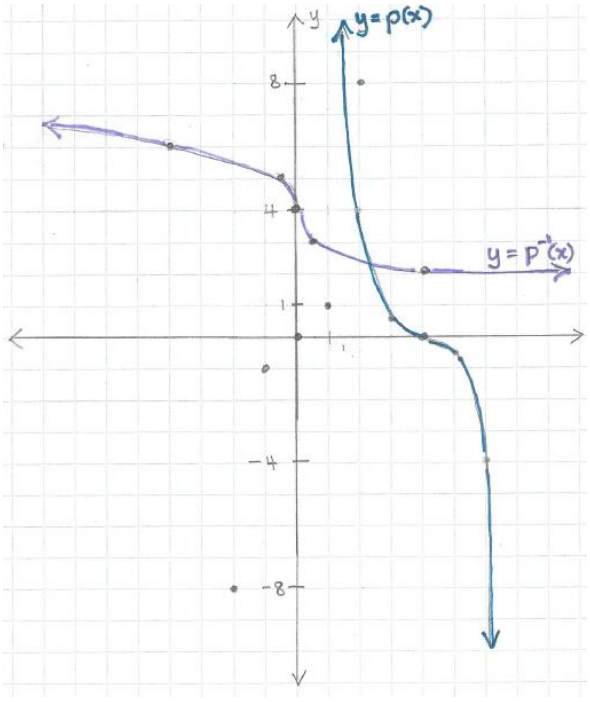
For the inverse, $p^{-1}(x)$:

$(x, y) \rightarrow (y, x)$

$(4, 0) \rightarrow (0, 4)$

$(5, -\frac{1}{2}) \rightarrow (-\frac{1}{2}, 5)$

$(6, -4) \rightarrow (-4, 6)$



3. Given that the function $f(x) = \frac{1}{x}$ has been transformed to $g(x) = -3f(6x-12)+1$:

a) Rewrite $g(x)$ in terms of the base function given for $f(x)$. $g(x) = \frac{-3}{6(x-2)} + 1$

b) Describe a different set of transformations that would result in the same graph.

$h(x) = \frac{1}{-2(x-2)} + 1$ Reflecting in the y-axis, horizontally compressing by a factor of 2, translating 2 right and 1 up would result in the same graph.

4. Graph $f(x) = -3|-2(x-4)| - 1$