MATH 122: Calculus II
Some Hints and Answers on Assignment 6
I: Section 6.1: 14, 15, 18

Exercise 14 : (i): If $P(a,b)$ is on the graph of f, then $f(a) = b$ so $f^{-1}(b) = a$ which means $Q(b,a)$ is on the graph of f^{-1}

(ii) The midpoint of a line segment between (a_1, b_1) and (a_2, b_2) is $\left(\frac{a_1+a_2}{2}, \frac{b_1+b_2}{2}\right)$

(ii) Lines with slopes which are negative reciprocals of each other are perpendicular.

Exercise 15: The domain of f = closed interval [-1,2] while range f = closed interval [1/2, 4].

Exercise 18 : The domain of f = closed interval [0,3] while range f = closed interval [-1,1].

II: Section 6.2: 2, 10, 15
Use $(\ln(g(x)))' = \frac{g'(x)}{g(x}$

Exercise 2: $f'(x) = \frac{4x^3}{x^4+1}$

Exercise 10: $f'(x) = \frac{1}{(6x+7)^{1/3}} \times \frac{2}{(6x+7)^{2/3}} = \frac{2}{6x+7}$

Exercise 15: $f'(x) = \frac{-1}{x(\ln x)^2} - \frac{1}{x}$