# Precalculus
# Homework Lecture 5

1. Find the inverse function. You are asked to do the algebra only; you are not asked to determine the domain or range of the function or its inverse.

   (a) $f(x) = 3x^2 + 4x - 7$, where $x \geq -\frac{2}{3}$.

   (b) $f(x) = 2x^2 + 3x - 5$, where $x \geq -\frac{3}{4}$.

   (c) $f(x) = \dfrac{2x+5}{x-4}$, where $x \neq 4$.

   (d) $f(x) = \dfrac{3x+5}{2x-4}$, where $x \neq 2$.

   (e) $f(x) = \dfrac{5x+6}{4x+5}$, where $x \neq -\frac{5}{4}$.

   (f) $f(x) = \dfrac{2x-3}{-3x+4}$, where $x \neq \frac{4}{3}$..

2. Find the inverse function and its domain.

   (a) $y = \ln(x+3)$.

   (b) $y = 4\ln\,(x-3) - 4$.

   (c) $y = 2\ln\,(-2x+4) + 1$

   (d) $f(x) = e^{x^3}$.

   (e) $y = (\ln x)^2$, $x \geq 1$.

   (f) $y = \dfrac{e^x}{1+2e^x}$.

   (g) $f(x) = 2^{2x} + 2^x - 2$.

3. Find the inverse function $f^{-1}$. Plot roughly by hand $y = f(x)$. Using the plot of $y = f(x)$, plot roughly by hand $f^{-1}(x)$. Indicate the relationship between the graph of $f(x)$ and $f^{-1}(x)$.

   (a) $f(x) = x^2 + 2x - 2, \qquad x \geq -1.$

   (b) $f(x) = x^2 + x - 2, \qquad x \geq -\frac{1}{2}.$

4. **This problem uses material that has not been studied (yet), and will therefore not appear on the quiz.**