## 27 August 2014 More Functions

(1) Sketch the following graphs:
(a) $y=x^{2}-4 x+2$
(b) $y=\sqrt[3]{3-x}$
(2) What values of $x$ satisfy the inequality $\left|x^{2}-3\right| \geq 5$ ?
(3) (a) Find functions $f$ and $g$ such that $(f \circ g)(x)=\left(x^{2}+3\right)^{1 / 3}$. Now find two other functions $f$ and $g$ (different than your first two choices) with the same property.
(b) If $f(x)=x^{2}+4 x+5$ and $g(x)=2 x+1$, expand and simplify $(f \circ g)(x)$ and $(g \circ f)(x)$.
(4) What is the difference between the functions $f(x)=\frac{x^{2}-4}{x-2}$ and $g(x)=x+2$ ?
(5) Let $\ell_{1}$ be the line with slope $1 / 2$ and $y$-intercept -4 . Let $\ell_{2}$ be the line which passes through the points $(-1,4)$ and $(5,-2)$.
(a) Find equations for the lines $\ell_{1}$ and $\ell_{2}$ of the form $y=m x+b$.
(b) Which line is increasing as a function of $x$ ? Which line is decreasing?

