## 27 August 2014 More Functions

(1) Sketch the following graphs:

(a) 
$$y = x^2 - 4x + 2$$

(b) 
$$y = \sqrt[3]{3-x}$$

(2) What values of x satisfy the inequality  $|x^2 - 3| \ge 5$ ?

(3) (a) Find functions f and g such that  $(f \circ g)(x) = (x^2 + 3)^{1/3}$ . Now find two other functions f and g (different than your first two choices) with the same property.

(b) If  $f(x) = x^2 + 4x + 5$  and g(x) = 2x + 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 = mx + b.

<sup>(</sup>b) Which line is increasing as a function of x? Which line is decreasing?