(1) Is it true that between any two distinct real numbers there is a rational number? Why or why not?

(2) What is the largest real number $x$ such that $x < 1$?

(3) Give the interval notation for the set of numbers determined by the following conditions.
   (a) $-1 \leq x \leq 2.5$
   (b) $3 < x < 3.2$
   (c) $x < 7$
   (d) $x \geq 2.1$
   (e) $|x - 2| < .1$
   (f) $|x + 1| < .2$
   (g) $|2.1 - x| < .05$
   (h) $|2x - 1| < .3$

(4) Let

$$f(x) = \begin{cases} 
  x & \text{if } -1 \leq x < 0 \\
  2 & \text{if } x = 0 \\
  1 - x & \text{if } x > 0. 
\end{cases}$$

   (a) $f(-1) =$
   (b) $f(0) =$
   (c) $f(1.5) =$
   (d) Graph the function.
(5) Write \( h(x) = |x^2 - 4| \) in the form of “cases.” Graph it.

(6) Graph

(a) \( y = \frac{1}{x} \)

(b) \( y = \frac{1}{x^2} \)

(7) Find the straight lines satisfying each of the following conditions.

(a) slope \( \frac{1}{2} \), through the point \((-1, 2)\).

(b) parallel to \( x + 3y = 1 \), through \( (\frac{1}{2}, 1) \).

(c) perpendicular to \( y = \frac{2}{5}x + 1 \), through \( (1, -2) \).

(d) through the points \((1, -2)\) and \((3, 1)\).