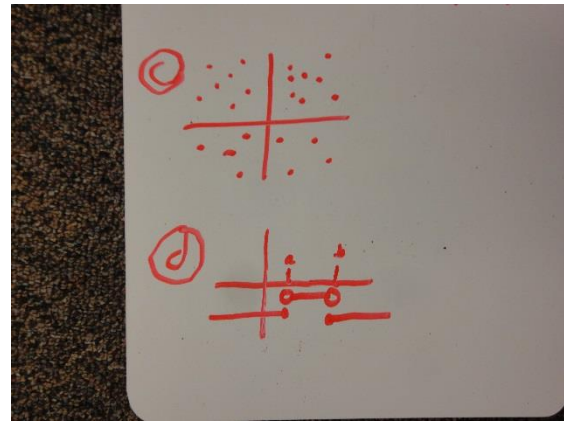
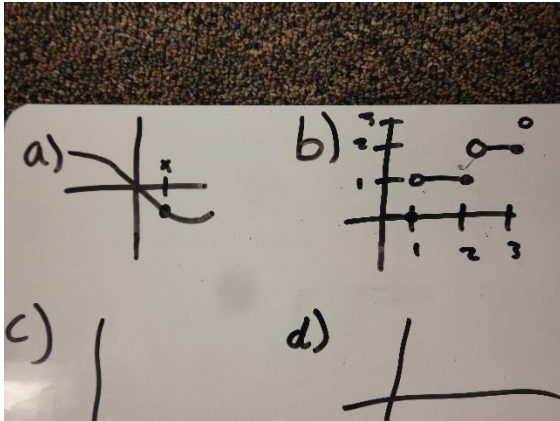
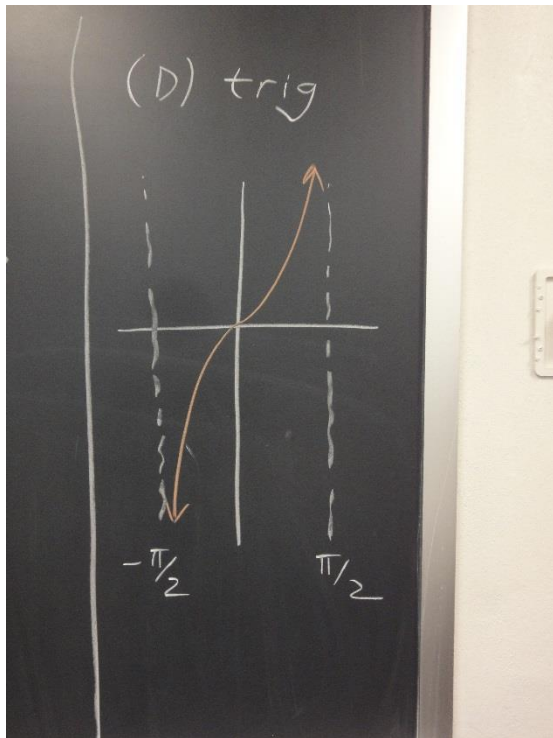


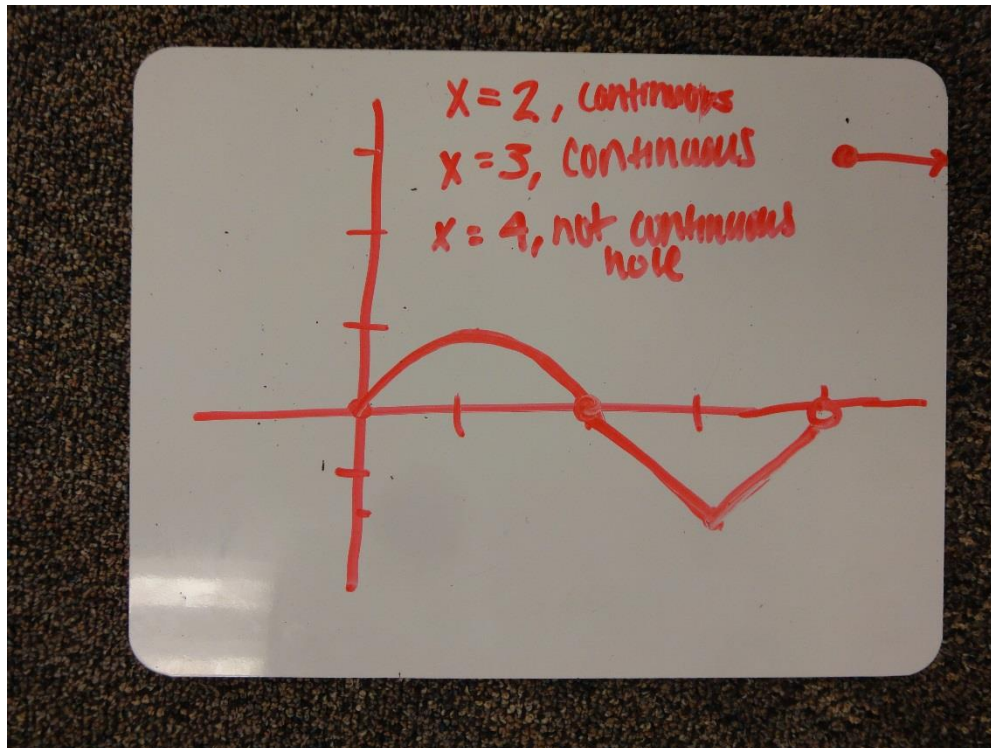
Here are some nice examples for (a)-(d):



Recall we mentioned that the “function” seen in (c) could be debated (is it really a function?) but the general idea is there. Another good example for (d) would be the tangent function:



Second problem. If you graph the function carefully, this gives you all the information you need to answer the question.



Third problem. Both “pieces” are continuous functions so the way to ensure continuity is to “stitch” the two functions together. A mental image of possibilities might look similar to this (see below left) but only one such a value will ensure continuity at $x = 2$ (see below right).



$$\begin{aligned}
 A &= 2 \\
 x^3 &= 2^3 = 8 \\
 ax^2 &= a2^2 = a4 \\
 a4 &= 8 \\
 a &= \frac{8}{4} \\
 a &= 2
 \end{aligned}$$