Curve Sketching for Oxbridge Interviews

Mr Gravell

November 2015

1 Introduction

Usually the graph(s) you will be asked to sketch will be composed of parts you are familiar with, and you can build up a picture of the graph by considering the different parts. E.g. sometimes it will just be a curve you know, like $y = sin(x)$ or $y = x^2$, but they have stretched it and moved it a bit, or combined it with another function you also know.

If you like, you can watch these two videos: Curve Sketching Part 1, Curve Sketching Part 2 which show some extra techniques you can use.

DO NOT USE THIS LABORIOUS APPROACH IN AN INTERVIEW - the interviewer will die of boredom - but you can use SOME of the techniques to find points or features of your curve.

Try sketching these curves - do as much as you can for each curve in 5 minutes, then check your graph against Wolfram Alpha.

2 Exercises

$y = \frac{1}{x} + x$

$y = 7 + 3cos(2x + \pi/2)$

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

$y^2 = \frac{(x-1)}{x^2}$ for $x \geq 0$

$y = \tan(x)$ and $y = \tan^{-1}(x)$ on the same axes for $0 \leq x \leq \pi/2$

$y = \frac{\sin(x)}{x}$

$y = \sin(x^2)$

$y = \sin(x) + \cos(x)$

$y = \sin^2(x) + \cos^2(x)$

$y = \cos^{-2}(2x)$

If you google "curve sketching" there are plenty more to practise online.