F2_RT9

Sketch the function $y = \cos(\tan(x))$ for $-\pi < x \leq \pi$, being sure to identify interesting points accurately. Try to do this by hand before reaching for graphing software or similar!

What happens if you compose other pairs of trig functions ($\sin(x)$, $\cos(x)$ and $\tan(x)$) for $-\pi < x \leq \pi$? Can you sketch the resulting functions?

Which compositions of pairs of trig functions lead to particularly interesting functions? For example, which have no turning points, or finitely many turning points, or infinitely many turning points? Which have no roots, or finitely many roots, or infinitely many roots? What types of symmetry do the functions display? Pick some properties of your own to investigate.

You could extend this further by composing even more functions, for example $y = \sin(\sin(\sin(x)))$ or $y = \sin(\cos(\sin(x)))$.

Relevance

F2 How can we represent a function by a graph, and how are key properties of a function visible on a graph?

