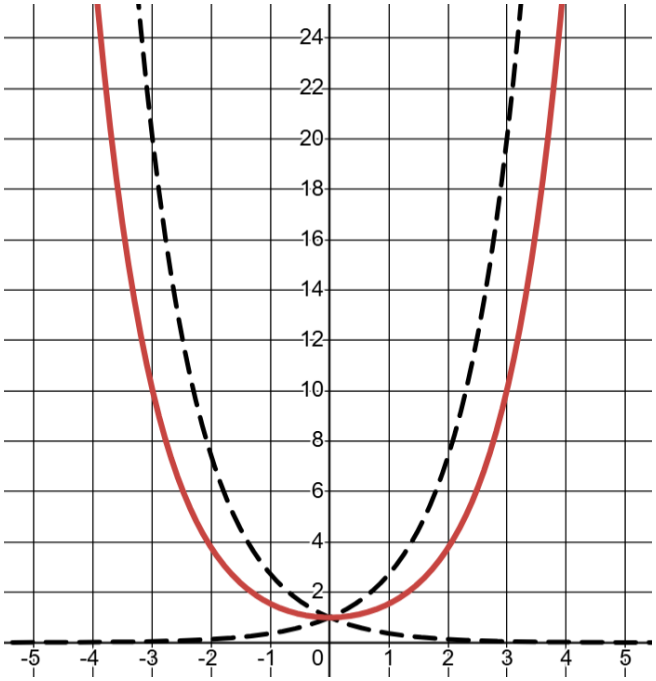
Graphs of Hyperbolic Functions

$y = \cosh x$

$$\cosh x = \frac{e^x + e^{-x}}{2}$$

The graph of $y = \cosh x$ is the mean of the graphs $y = e^x$ and $y = e^{-x}$.
Plot the graph on the grid below.



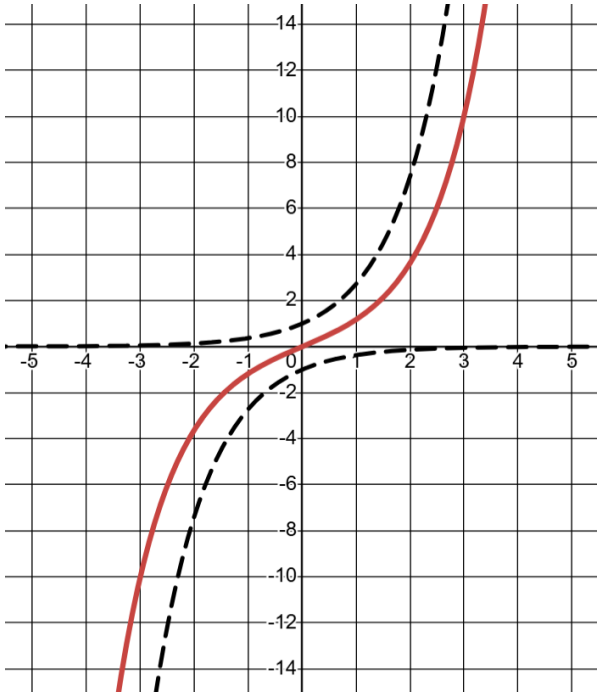
What similarities are there between the graph of $y = \cosh x$ and $y = \cos x$?

e.g. Both pass through $(0, 1)$
Both are symmetrical about the y-axis

$y = \sinh x$

$$\sinh x = \frac{e^x - e^{-x}}{2}$$

The graph of $y = \sinh x$ is the mean of the graphs $y = e^x$ and $y = -e^{-x}$.
Plot the graph on the grid below.



What similarities are there between the graph of $y = \sinh x$ and $y = \sin x$?

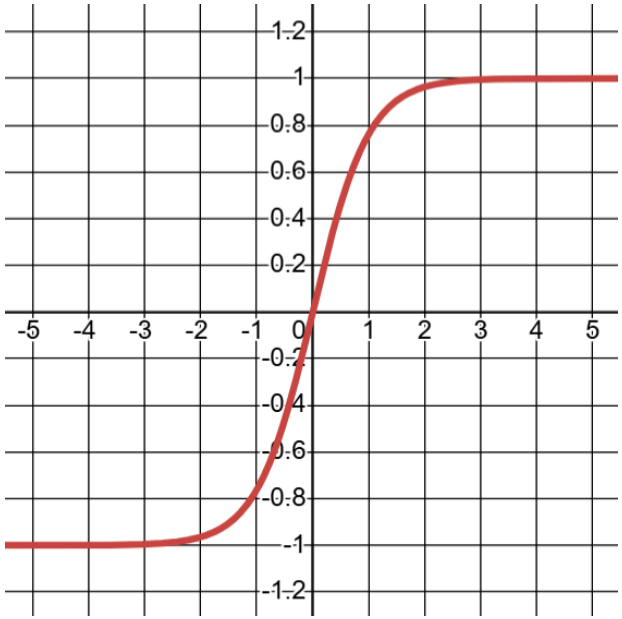
e.g. Both pass through $(0, 0)$

$y = \tanh x$

$$\tanh x = \frac{e^{2x} - 1}{e^{2x} + 1}$$

x	-3	-2	-1	0	1	2	3
y	-1.0	-0.96	-0.76	0	0.76	0.96	1.0

Complete the table and plot the graph.



What similarities are there between the graph of $y = \tanh x$ and $y = \tan x$?

e.g. Both pass through $(0, 0)$
Both have asymptotes