

Exercise Sheet 2

Hand in your work by 16 October.

1. (Warm-up question*) Use the formulas $\cosh x = \frac{1}{2}(e^x + e^{-x})$ and $\sinh x = \frac{1}{2}(e^x - e^{-x})$ to verify that $\cosh^2 x - \sinh^2 x = 1$ for all x .
2. Solve the equation $\cos x = \frac{\sqrt{2}}{2}$ for x .
3. Solve the equation $11 \sin(2x) = 3$ for x .
4. (a) Find the Cartesian coordinates of the point with polar coordinates $(r, \theta) = (4, \frac{\pi}{4})$.
(b) Find the polar coordinates of the point with Cartesian coordinates $(x, y) = (-2, 3)$.
5. Solve the equation $2 \sin x - 5 \cos x = 1$ for x .
6. Solve the equation $\sin^2 x + \cos x + 1 = 0$ for x . (Hint: use Pythagoras' theorem.)

Solutions will be available after the hand-in date at:
<http://people.bath.ac.uk/rm257/MA10192/>

RM, 05/10/2017

*Do not hand in your work for this question.