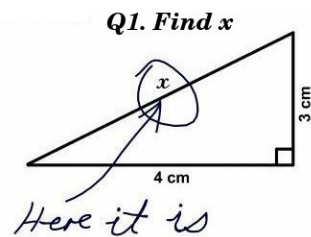


MA211
Lecture 12: Class Test
Wed 16 October 2008



Solutions

Q2 (i)

Write down the general solution to the following differential equation:
 $25y'' - 20y' + 4y = 0$.

Q1. Using that $\cosh(x) = \frac{1}{2}(e^{-x} + e^x)$ and $\sinh(x) = \frac{1}{2}(e^{-x} - e^x)$ to show that

$$\cosh^2 x - \sinh^2 x = 1.$$

Q2. Write down the general solution to the following differential equations:

(i) $25y'' - 20y' + 4y = 0$.

(ii) $y'' + y' - 12y = 0$

Q3. Find values of b and c such that $y(x) = \cosh(2x)$ is a solution to the differential equation:

$$y'' + by' + cy = 0.$$

Solutions

Q2 (ii)

Write down the general solution to the following differential equation:
 $y'' + y' - 12y = 0$

Solutions

Q1

Using that $\cosh(x) = \frac{1}{2}(e^{-x} + e^x)$ and $\sinh(x) = \frac{1}{2}(e^{-x} - e^x)$ to show that

$$\cosh^2 x - \sinh^2 x = 1.$$

Solutions

Q3

Find values of b and c such that $y(x) = \cosh(2x)$ is a solution to the differential equation:

$$y'' + by' + cy = 0.$$