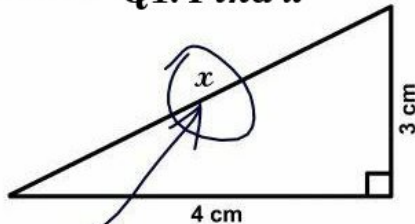


MA211

Lecture 12: Class Test

Wed 16 October 2008

Q1. Find x



Here it is

Q1. Use $\cosh(x) = \frac{1}{2}(e^x + e^{-x})$ 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

Q1

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

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

Q2 (i)

Write down the general solution to the following differential equation:

$$25y'' - 20y' + 4y = 0.$$

Q2 (ii)

Write down the general solution to the following differential equation:

$$y'' + y' - 12y = 0$$

Solutions

Q3

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

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