Math.2 Autumn 2016 Mid-Term Exam-1 Group 2 30 Marks Time 1 Hour

[1]Find **y`** from the following:

(a) $y = 2\sinh 2x - \tanh x$ (b) $y = \sinh^{-1} x + \cosh^{-1} x$ (c) $y = x + (\sin x)^{-1}$

(d) $y = 5^x . \log x$ (e) $y = \tan^{-3} x - \tanh^{-1} x$ (f) $x \cos y + y \sin x = 1$

[2]Find the integrals:

(a) $\int (2x^{-3} - 4^x)\, dx$ (b) $\int (\cosh 3x + \sin 2x)\, dx$ (c) $\int (\frac{1}{x} - \frac{4}{x-4})\, dx$

(d) $\int x . \cos x\, dx$ (e) $\int (\cos 2x + \cos^2 x)\, dx$ (f) $\int \frac{x-3}{x^2-5x} dx$

[3]Find the area of the regions bounded by : $y = x^4 - x^2$, x-axis, x in [0, 2].

[4]Find the volume of the solid generated by revolving the region bounded by :

$y = \frac{2}{3+x^2}$, x-axis, x in [1, 2] about y – axis.