Math.2 Autumn 2016 Mid-Term Exam-1 Group1 30 Marks Time 1 Hour

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

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

(d) $y = 4^x . \ln x$ (e) $y = \tan^{-1} x - \tanh^{-1} x$ (f) $y^2 = \cos y + x . \sin x$

[2]Find the integrals:

(a) $\int (2x + x^{-3} - 3^x)\, dx$ (b) $\int (\cos 2x + \sinh 3x)\, dx$ (d) $\int (\frac{1}{x-1} - \frac{2}{x})\, dx$

(e) $\int x . e^x\, dx$ (e) $\int (\sin x + \sin^2 x)\, dx$ (f) $\int \frac{x}{x^2-5x+6}\, dx$

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

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

$y = 3 + x^2$, x-axis, x in [0, 2] about x – axis.