

Department of Energy and Sustainable Energy Answer <b>All</b> questions      Duration: 1 Hour	Mathematics 3 December 2016	Mid-Term Exam-2 20 Marks
<p>[1] Show that <math>u(x, y)</math> is harmonic where <math>u = e^x \sin y</math>.</p> <p>[2] Show that <math>f(z)</math> satisfies Riemman's equations where <math>f(z) = z + \cos z</math></p> <p>[3] Find the residues of the function : <math>f(z) = \frac{z-1}{(z+3)(z-2)}</math></p> <p>[4] Show that : If <math>C</math> is the circle <math> z  = 4</math>. Then</p> <p>(a) <math>\int_c \frac{\cos z}{z} dz = 2\pi i</math>                      (b) <math>\int_c \frac{z}{z^2-1} dz = 2\pi i</math>                      (c) <math>\int_c \frac{z \cdot \sin z}{z-6} dz = 0</math></p>		

*Good Luck*

*Dr. Mohamed Eid*