Eskişehir Osmangazi University - Electrical Engineering Department
Advanced Calculus
2nd Midterm Examination - Summer 2012

!!! For each problem put the answer next to it !!!

1. Let C be the positively oriented circle $|z-1| = 1$. Evaluate $\int_C \frac{1}{(z-0.6)(z-0.8)} dz$.

Ans. 0

2. Find a general solution for $\frac{dy}{dx} + \frac{1}{x}y = 1$.

Ans. $y = \frac{x}{2} + \frac{c}{x}$

3. Find a general solution for $\frac{d^2y}{dx^2} + 2\frac{dy}{dx} + y = e^{-x}$.

Ans. $y = (c_1 + c_2 x)e^{-x} + \frac{x^2}{2}e^{-x}$

4. [For each part state "True" or "False"; no partial credits for this problem]

(a) The functions $1, t, t^2$ are linearly independent on $0 \le t \le 2$. **T**

(b) The functions $t, \cos(t)$ are linearly independent on $0 \le t \le 2$. **T**

(c) The functions $3, t, 2t + 2$ are linearly independent on $0 \le t \le 2$. **F**

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