SE IT

Applied Mathematics III (CBGS)

Question Bank Sep 2020

1. What is L {t sint}

   (a) 2s/ ((s^2+1)^2) (b) 2/ ((s^2+1)^2) (c) 2s/ (s^2+1) (d) ((s^2+1)^2)/2s

2. what is inverse Laplace of {e^(-as) F(s)}.

   (a) f(t-a) H(t) (b) f(t-a) H(t-a) (c) f(t) H(t) (d) f(t-a) H(t+a)

3. Find the bilinear transformation that maps 2,i,-2 onto the points 1, i,-1.

   (a) (3z-5) / (z+1) (b) (z-1)/(z+1) (c) (3z+2i)/(zi+6) (d) (z+1)/(z-1)

4. The value of $\int_c \vec{F}.d\vec{r}$ where $c: y = 2x^2$ & $\vec{F} = 3xy\hat{i} - y^2\ \hat{j}$ from (0,0) to (1,2)

   (**a**) $-\frac{5}{2}$ (b) 6 (c) $-\frac{7}{6}$ (d) None

5. $Z[\sin\ n\theta], n \geq 0$ is

   (a) $\frac{z}{z^2 - 2z\cos\theta + 1}$ (b) $\frac{z\sin\theta}{z^2 - 2z\cos\theta + 1}$

   (c) $\frac{z}{z^2 - 2z\sin\theta + 1}$ (d) $\frac{z\sin\theta}{z^2 + 2z\cos\theta + 1}$

6. Choose the function $f(x),\ -\infty < x < \infty$, for which a Fourier series cannot be defined

   (a) $3\sin(25x)$ (b) $4\cos(20x+3)+\sin(10x)$

   (c) $e^{(-|x|)}\sin(25x)$ (d) 1

7. Which of the following function is not analytic.

   (a) sinh z (b) 1/z (c) cos z (d) e^z

8. $L^{-1}\left[\dfrac{e^{4-3s}}{(s+4)^{\frac{5}{2}}}\right]$

(a) $\dfrac{4}{3\sqrt{\pi}}e^{-4(t-4)}(t-3)^{\frac{3}{2}}H(t-3)$ (b) $e^{-4(t-4)}(t-3)^{\frac{3}{2}}H(t-3)$

(c) $\dfrac{4}{3\sqrt{\pi}}e^{-4(t-4)}(t-3)^{\frac{1}{2}}H(t-3)$ (d) $\dfrac{4}{3\sqrt{\pi}}(t-3)^{\frac{3}{2}}H(t-3)$

9. Determine the constants a, b, c, d so that the function

$f(z) = x^2 + 2axy + by^2 + i(cx^2 + 2dxy + y^2)$ is analytic.

(a) 1,1,1,-1 (b) 2,1,1,-2 (c) 1,-1,-1,1 (d) 0,1,-1,2

10. Evaluate $\int_0^{\infty} e^{-\sqrt{2}t}\,\dfrac{\sin t \sinh t}{t}\,dt$

(a) pi/2 (b) pi/4 (c) pi/8 (d) pi/6

****