

Unit 6 - The inverse Laplace transform

Course outline

How to access the portal?

Week0

Introduction to complex variables

Important theorems in complex variables

Branch cuts of the square root function

The inverse Laplace transform

Pole on a branch cut.

L shaped branch cut.

L shaped branch cut continued

Inverse Laplace Transform.

Inverse Laplace Transform.

Additional material or corrections to lectures.

Summary of the total course.

Quiz : Week-4 Assessment

Week4 Assessment Solution

Week-4 Assessment

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2019-08-28, 23:59 IST.

1) The value of the integral $\int_{-a}^a \frac{\sqrt{a^2-x^2}}{1+x^2} dx$ equals to

1 point

$\pi(\sqrt{a^2+1}-1)$

$\pi(\sqrt{a+1}-1)$

$\pi(\sqrt{2a^2-1}-1)$

$\pi(\sqrt{2a-1}-1)$

No, the answer is incorrect.

Score: 0

Accepted Answers:

$\pi(\sqrt{a^2+1}-1)$

2) The value of the integral $\int_{-1/a}^{1/a} \frac{\sqrt{1-a^2x^2}}{1+a^2x^2} dx$ equals to

1 point

$\pi(\sqrt{2}-a)$

$\pi(a\sqrt{2}-1)$

$\pi(\sqrt{2a}-1)$

$\pi(\sqrt{2}-1)/a$

No, the answer is incorrect.

Score: 0

Accepted Answers:

$\pi(\sqrt{2}-1)/a$

3) The value of the integral $\int_0^2 \frac{1}{\sqrt{x(2-x)}} dx$ equals to

1 point

0

$\pi/2$

π

2π

No, the answer is incorrect.

Score: 0

Accepted Answers:

π

4) The value of the integral $\int_0^3 \frac{1}{\sqrt{x(3-x)}} dx$ equals to

1 point

0

$\pi/3$

3π

π

No, the answer is incorrect.

Score: 0

Accepted Answers:

π

5) The value of the integral $\int_0^{10} \frac{1}{\sqrt{x(10-x)}} dx$ equals to

1 point

0

10π

$\pi/10$

π

No, the answer is incorrect.

Score: 0

Accepted Answers:

π

6) Given the Bromwich integral $f(t) = \mathcal{L}^{-1}(F(s)) = \frac{1}{2\pi i} \int_{\gamma-i\infty}^{\gamma+i\infty} F(s)e^{st} ds$, then $\mathcal{L}^{-1}(\frac{1}{s-3})$ equals to

1 point

$e^t/3$

$e^{t/3}$

e^{3t}

$3e^t$

No, the answer is incorrect.

Score: 0

Accepted Answers:

e^{3t}

7) Given the Bromwich integral $f(t) = \mathcal{L}^{-1}(F(s)) = \frac{1}{2\pi i} \int_{\gamma-i\infty}^{\gamma+i\infty} F(s)e^{st} ds$, then $\mathcal{L}^{-1}(\frac{3}{s^2+9})$ equals to

1 point

$\sin(t/3)$

$\sin(3t)$

$\sin(9t)$

$9 \sin(t)$

No, the answer is incorrect.

Score: 0

Accepted Answers:

$\sin(3t)$

8) Given the Bromwich integral $f(t) = \mathcal{L}^{-1}(F(s)) = \frac{1}{2\pi i} \int_{\gamma-i\infty}^{\gamma+i\infty} F(s)e^{st} ds$, then $\mathcal{L}^{-1}(\frac{s}{s^2+4})$ equals to

1 point

$\cos(t/2)$

$4 \cos(t)$

$\cos(4t)$

$\cos(2t)$

No, the answer is incorrect.

Score: 0

Accepted Answers:

$\cos(2t)$

9) Given the Bromwich integral $f(t) = \mathcal{L}^{-1}(F(s)) = \frac{1}{2\pi i} \int_{\gamma-i\infty}^{\gamma+i\infty} F(s)e^{st} ds$, then $\mathcal{L}^{-1}(\frac{2}{s^2+1})$ equals to

1 point

t^3

t^4

t^2

$\cos(t)$

No, the answer is incorrect.

Score: 0

Accepted Answers:

t^2

10) Given the Bromwich integral $f(t) = \mathcal{L}^{-1}(F(s)) = \frac{1}{2\pi i} \int_{\gamma-i\infty}^{\gamma+i\infty} F(s)e^{st} ds$, then $\mathcal{L}^{-1}(\frac{5s}{s^2+1})$ equals to

1 point

$5 \sin(t) + \cos(t)$

$\sin(t) + 5 \cos(t)$

$\sin(5t) + \cos(t)$

$\sin(t) + \cos(5t)$

No, the answer is incorrect.

Score: 0

Accepted Answers:

$5 \sin(t) + \cos(t)$

11) The value of the integral $\int_0^\infty \frac{x^{-p}}{(a-x)} dx$ equals to

1 point

$-\pi a^{-p} \cot(p\pi)$

$-\pi a^p \cot(p\pi)$

$-\pi a^{-p^2} \cot(p\pi)$

$-\pi a^{p^2} \cot(p\pi)$

No, the answer is incorrect.

Score: 0

Accepted Answers:

$-\pi a^{-p} \cot(p\pi)$