Unit 5 - Branch cuts of the square root function

Week3 Assessment

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

Due on 2019-08-21, 23:59 IST.

1) Compute the integral $\int_c z\,dz$ along the straight line from the origin to $(2+2i)$ — *1 point*

- $4i$
- 4
- $2\sqrt{2}$
- $2\sqrt{2}i$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$4i$

2) Given the complex function $f(z) = \frac{\cos z}{z^5}$. The singular point '$a$' and the order of the pole at $z = a$ are — *1 point*

- $a = \pi/2,\ 4$
- $a = \pi/2,\ 5$
- $a = 0,\ 4$
- $a = 0,\ 5$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$a = 0,\ 5$

3) Given the complex function $f(z) = \frac{\cos z}{z^5}$. Find the residue at the only singular point. — *1 point*

- $\frac{4}{4!}$
- $\frac{5}{5!}$
- $\frac{1}{5!}$
- $\frac{2}{5!}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\frac{5}{5!}$

4) Consider $J = \oint_c \frac{\cos z}{z^5} dz$, where C is the contour defined by a circle $|z-1| = 0.5$. The value of J equals to — *1 point*

- 0
- $\frac{\pi i}{4}$
- $\frac{\pi i}{12}$
- $\frac{\pi i}{6}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
0

5) Consider $J = \oint_c \frac{\cos z}{z^5} dz$, where C is the contour defined by a circle $|z-0.4| = 0.5$. The value of J equals to — *1 point*

- 0
- $\frac{\pi i}{4}$
- $\frac{\pi i}{12}$
- $\frac{\pi i}{6}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\frac{\pi i}{12}$

6) Consider $J = \oint_c \frac{\cos z}{z^5} dz$, where C is the contour defined by a circle $|z-0.4| = 10$. The value of J equals to — *1 point*

- 0
- $\frac{\pi i}{3}$
- $\frac{\pi i}{6}$
- $\frac{\pi i}{12}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\frac{\pi i}{12}$

7) Compute the integral $J = \int_a^b z\,dz + \int_b^c z\,dz$, where $a = 0,\ b = 2,\ c = 2+2i$ are the points on the complex plane. — *1 point*

- $4i$
- 4
- $2\sqrt{2}$
- $2\sqrt{2}i$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$4i$

8) Consider $f(z) = \frac{5z^2+17}{z^3-2z^2+4z-8}$. The singular points for $f(z)$ are — *1 point*

- $2, 2i$
- $2, -2i$
- $2i, -2i$
- All of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
All of the above

9) Consider $J = \oint_c \frac{5z^2+17}{z^3-2z^2+4z-8}\,dz$, where C is the contour defined by a circle $|z-5| = 1$. The value of J equals to — *1 point*

- $2\pi i$
- πi
- 0
- None of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
0

10) Consider $J = \oint_c \frac{5z^2+17}{z^3-2z^2+4z-8}\,dz$, where C is the contour defined by a circle $|z-3| = 3$. The value of J equals to — *1 point*

- 0
- $\frac{37\pi i}{4}$
- $\frac{37\pi i}{3}$
- $\frac{37\pi i}{2}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\frac{37\pi i}{4}$

11) Consider $J = \oint_c \frac{5z^2+17}{z^3-2z^2+4z-8}\,dz$, where C is the contour defined by a circle $|z-(1+i)| = 3$. The value of J equals to — *1 point*

- $\frac{(77i-3)\pi}{8}$
- $\frac{(77i+3)\pi}{8}$
- 0
- $10\pi i$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\frac{(77i+3)\pi}{8}$

12) Consider $J = \oint_c \frac{5z^2+17}{z^3-2z^2+4z-8}\,dz$, where C is the contour defined by a circle $|z| = 3$. The value of J equals to — *1 point*

- $\frac{37\pi i}{4}$
- $2\pi i$
- 0
- $10\pi i$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$10\pi i$

13) Compute the integral $\int_c z\,dz$ along a contour C, that is composed of a straight line from the origin to $2\sqrt{2}i$. And then along a circular arc from $2\sqrt{2}i$ to $(2+2i)$ with centre at the origin. — *1 point*

- i
- $2i$
- $4i$
- 0

No, the answer is incorrect.
Score: 0
Accepted Answers:
$4i$

14) The value of $J = \int_0^\infty \frac{z}{z^3+8}\,dz$ equals to — *1 point*

- $\frac{\pi}{3\sqrt{3}}$
- $\frac{\pi}{2\sqrt{2}}$
- $\frac{\pi\sqrt{3}}{3}$
- $\frac{\pi\sqrt{2}}{2}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\frac{\pi}{3\sqrt{3}}$

15) The value of $J = \int_0^\infty \frac{1}{\sqrt{5x}\,(1+25x^2)}\,dx$ equals to — *1 point*

- $\frac{\pi}{\sqrt{5}}$
- $\frac{\pi}{\sqrt{10}}$
- $\pi\sqrt{\frac{5}{2}}$
- $\frac{\pi}{5\sqrt{2}}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\frac{\pi}{5\sqrt{2}}$

16) The value of $J = \int_0^\infty \frac{1}{\sqrt[3]{x}\,(1+x^2)}\,dx$ equals to — *1 point*

- $\frac{\pi}{\sqrt{3}}$
- $\frac{\pi}{3\sqrt{3}}$
- $\frac{3\pi}{\sqrt{3}}$
- π

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\frac{\pi}{\sqrt{3}}$

17) The value of $J = \int_0^\infty \frac{1}{(1+x^3)}\,dx$ equals to — *1 point*

Hint : Assume $x = e^t$

- π
- $\frac{\pi}{3\sqrt{3}}$
- $\frac{2\pi}{3\sqrt{3}}$
- $\frac{3\pi}{\sqrt{3}}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\frac{2\pi}{3\sqrt{3}}$

18) Compute the integral $J = \oint_c z\,dz$ along a closed contour C, that is composed of three straight lines : 0 to 2, 2 to $(2+2i)$ and $(2+2i)$ to 0 in the anti − clockwise direction. The value of J equals to — *1 point*

- $4i$
- 0
- $2\sqrt{2}$
- $2\sqrt{2}i$

No, the answer is incorrect.
Score: 0
Accepted Answers:
0