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1.		16	6	4	6
2.		8	2	2	4
3.		16	4	4	8
4.		16	4	4	8
5.		20	6	6	8
6.		22	6	8	8
7.		14	4	2	8
8		5		2	3
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		144	32	32	53+27

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1-3.

4.

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I

- 1.
- 2.
- 3.

4.

$z = a + bi?$

5.

6.

7.

8.

9.

10.

1.

$$z_1 = 1 + i, z_2 = 2 + i$$

$$z_3 = z_1 + z_2, z_4 = z_1 - z_2, z_5 = \frac{z_2}{z_4}, z_6 = z_4 - z_5.$$

2. $z = 3; \quad z = 2; \quad z = 3i; \quad z = 2i;$
 $z = 1 + i; \quad z = 1 + \sqrt{3}i; \quad z = \sqrt{3} - i; \quad z = \sin[\quad] + i\cos[\quad].$
3. $|z_1 - z_2| \quad z_1 - z_2$
4. $z \bar{z} = |z|^2; \quad |z| = |\bar{z}|; \quad \text{Arg } z_1 - z_2 = \text{Arg } z_1 - \text{Arg } z_2.$
5. $z^2 - 25 = 0; \quad z^2 - 4z - 13 = 0; \quad z^2 - 2i = 0.$

1. $z_1 = i, z_2 = 1 + 2i \quad z_3 = z_1 - z_2, z_4 = z_2 - z_3, z_5 = \frac{z_2}{z_4}.$
2. $z = 1 + i; \quad z = \sqrt{3} - i; \quad z = \sin[\quad] + i\cos[\quad].$
3. $z \cup \bar{z} = 2\text{Re}z; \quad z^2 \cup \bar{z}^2; \quad \text{Arg } z^2 = 2\text{Arg}z.$
4. $|z - i| = |2 - i|; \quad |iz - 1| = |z - 1|; \quad \text{Arg } iz - 1 = \frac{\varphi}{2}.$

I

1.
2.
3. $z = x + iy$

1. $|z - 1 - 2i| = 2; \quad \frac{\varphi}{4} = \text{Arg } z - 1 = \frac{\varphi}{3}; \quad |z - \bar{z}| = 4;$
 $\text{Re } z^2 = 2; \quad \left| \frac{z - 1}{z - i} \right| = 2; \quad \arg z = 0.$

2. L

$$z = t + xt + iyt$$

$$z = t + 2 + 3it, t \in \mathbb{R};$$

$$z = t + 2t - 1 - t + 2i, t \in \mathbb{C};$$

$$z = t + asint + ibcost, 0 \leq t < \varphi.$$

3. $L \quad z = i \quad \text{Im } z = 1;$
 L
 $L \quad 2 + 3i.$

4. $z = 0$
 $\left| z - \frac{1}{z} \right| = a, a > 0.$

5. $1, i, 1 - i?$
 6.

$\arg z = \frac{\varphi}{4}; \quad \operatorname{Im} z = 0; \quad |z| = 1.$

1. $|z - 1| = |iz - 2|; \quad \arg i = \operatorname{Arg} z = i = \arg i = 1;$
 $|z - \bar{z}| = 1; \quad \operatorname{Re} z = \bar{z} = 2.$

2. L

$z = t + iyt,$
 $z = t + 3t + 4it, t \in \mathbb{R};$
 $z = t + 2t + 1 - t + 1^2i, t \in [1; 2];$
 $z = t + e^t + ie^t, 1 \leq t \leq 1.$

3. L
 L
 L
 $z = i, z = 2i$
 $xy = 1;$
 $1 - 2i - 3 - 4i.$
 $a = 4;$

4. $z = 0$
 $|z - 3 - 4i| = 1.$

I.

1.

2.

3.

4.

5.

6.

7. $w = f(z) = z_0$

8.

1. $z_n = \frac{n - 1 - 2n - 3i}{n}$

$a = 1 - 2i.$

2. $\lim_{n \rightarrow \infty} z_n = 0$
 $\lim_{n \rightarrow \infty} |z_n| = 0.$

3. z_n

4. $z_n = \frac{n^2 - 1 - in}{1 - in^2}; \quad z_n = \frac{2 - 3i^n}{5}.$

5. $\left. \begin{array}{l} \} \\ \} \end{array} \right\} \frac{i^n}{n-1 i - n^2}; \quad \left. \begin{array}{l} \} \\ \} \end{array} \right\} \frac{3i^n}{n-1 n!}; \quad \left. \begin{array}{l} \} \\ \} \end{array} \right\} \frac{n-1}{n-1 1 - i^n}.$

6. $w = \frac{\operatorname{Re} z^2}{z}, z_0 = 0; \quad w = \frac{\operatorname{Re} z}{\operatorname{Im} z}, z_0 = 1 - i.$

6. $f(z) = z^2 - \bar{z} - z - 1$

1. $\lim_{z \rightarrow a} f(z) = b; \quad) \lim_{z \rightarrow a} f(z) = \}; \quad \lim_{z \rightarrow \} f(z) = b;$
 $\lim_{z \rightarrow \} f(z) = b; \quad \lim_{z \rightarrow \} f(z) = \}; \quad \lim_{z \rightarrow \} f(z) = 0.$

2. $z_n = \frac{n^2 - 1 - n^2 - 1 - i}{n^2 - in - 1}$

$a = 1 - i.$

3. $z_n = 1 - \frac{i^n}{n}; \quad z_n = \arg 1 - \frac{i^n}{n}.$

4. $\left. \begin{array}{l} \} \\ \} \end{array} \right\} \frac{n}{n-1 3i^n}; \quad \left. \begin{array}{l} \} \\ \} \end{array} \right\} \frac{n!}{n-1 in^n}; \quad \left. \begin{array}{l} \} \\ \} \end{array} \right\} \frac{2i^n}{n-1 n!}.$

5. $w = \frac{\bar{z}}{z}; \quad w = \frac{|z - i|^2}{z - i}; \quad w = i \arg z - 1.$

6. $w = f(z) = z_0$

$w = \frac{\operatorname{Re} z^2}{z}, z_0 = 0; \quad w = \frac{z - 1 - \operatorname{Im} z - 1}{|z - 1|}, z_0 = 1.$

I

1. $w = f(z) = z_0.$

2.

3.

4.

5.

6. $f(z) = z^2 - z + 1 - \bar{z}$

1. $w = f(z)$ z_0 ,

$f(z) = z^3 - 3z^2 + 1, z_0 = 1 - i; \quad f(z) = \frac{z-i}{z+i}, z_0 = i.$

2.

$w = \bar{z} - z^2; \quad w = \overline{z - \operatorname{Re}z}; \quad w = z - i^3 - 2\bar{z};$
 $w = |z - i|^2 - z - i^2; \quad w = iz^2 - 3z; \quad w = \operatorname{Im}z - i\operatorname{Re}z.$

3.

$w = \bar{z}$

4.

a, b, c

$w = ax + by + icx - y$

5.

$f(z) = u(x,y) + iv(x,y)$

$u(x,y) = x^2 - y^2 - 5x - y - \frac{y}{x^2 - y^2}.$

1.

$w = f(z)$ z_0 ,

$f(z) = z^2 - 2z, z_0 = 3 - 2i; \quad f(z) = \frac{z-1}{z+1}, z_0 = 1.$

2.

$w = |z - a|^2 \quad a.$

3.

$w = \operatorname{Re}z - i\operatorname{Im}\bar{z}^2; \quad w = \operatorname{Im}z - \operatorname{Re}z; \quad w = z^3 - 2|z - 1|^2;$
 $w = \overline{z - i} - z - i^2; \quad w = z^2 - 2iz; \quad w = \operatorname{Re}^2 z - i\operatorname{Im}^2 z.$

4.

$f(z) = u(x,y) + iv(x,y)$

$v(x,y) = \ln(x^2 - y^2) - x - 2y.$

5.

I

1.

$w = f(z)$ $z_0?$

2.

1.

$w = f(z)$

z_0

$f(z) = z^3 - 3z^2 + 1, z_0 = 1 - i; \quad f(z) = \frac{z-i}{z+i}, z_0 = i.$

2.

$\alpha_1: |z - 1| = 2 \quad \alpha_2: |z - 1| = 2$

$w = iz^2 - z + 1.$

3.

$$w = \frac{z - i}{z + i}$$

4.

4. $e^{z_1 z_2} = e^{z_1} e^{z_2}; \quad \cos z_1 z_2 = \cos z_1 \cos z_2 - \sin z_1 \sin z_2.$
5. $w = e^z$ $\text{Re } z = a,$
 $\text{Im } z = b \quad (a, b \in \mathbb{R}).$

1. $z = e^{1-i}; \quad z = 2ie^i; \quad w = ie^{\frac{\varphi}{2}}.$
2. $z = 2\sqrt{3} - 2i; \quad z = \sqrt{3}; \quad z = \frac{1}{2} - \frac{\sqrt{3}}{2}i.$
3. $\text{Ln } e = \dots$

4. $\text{Ln } z_1 z_2 = \text{Ln } z_1 + \text{Ln } z_2; \quad \cos \frac{\varphi}{2} z = \sin z.$

5. $\ln z^2 = 2 \ln z; \quad \cos iz = \text{ch } z; \quad \text{ch}^2 z - \text{sh}^2 z = 1.$

6. $w = \ln z$ $|z| = R,$
 $\arg z \in [0, 2\pi).$

I

1. $M_0(x_0, y_0)$

2. $U(x, y)$ D

3. *если функция $f(z) = U(x, y) + iV(x, y)$ является аналитической в точке $z_0 = x_0 + iy_0$, то функции $U(x, y), V(x, y)$ являются гармоническими в точке $M_0(x_0, y_0)$?*

4. D $U(x, y)$
 D $f(z)$?

5. G $U(x, y)$
 G $f(z)$

$\text{Re } f(z) = U(x, y) \quad (\text{Im } f(z) = V(x, y))?$

1.

$U(x, y) = \arctg \frac{y}{x} \quad \delta(x, y) = \ln(x^2 + y^2) \quad V(x, y) = x^3 - y^3.$

2. $f(z)$

$\text{Re } f(z) = x^2 - y^2 \quad \text{Im } f(z) = xy^2; \quad \text{Re } f(z) = \frac{x^2 - y^2}{(x^2 + y^2)^2}?$

3. $f(z) = u(x,y) + iv(x,y)$

$u(x,y) = x^2 - y^2 - 5x - y - \frac{y}{x^2 - y^2}$.

4. $f(z) = u(x,y) + iv(x,y)$

$v(x,y) = e^{2y} \cos 2x$.

5. $f(z)$ $\text{Re} f(z) = x^2 - y^2 - x$

$f(0) = i$.

1.

$U(x,y) = e^x \sin y$ $\delta(x,y) = x^3 - 3xy^2$ $V(x,y) = x^4 - y^4 - 1$.

2. $f(z)$

$\text{Re} f(z) = x^2 - y^2$ $\text{Im} f(z) = 3xy^2 - x^3$ $\text{Re} f(z) = \frac{x^2 - x - y^2}{x^2 - y^2}$?

3. $f(z) = u(x,y) + iv(x,y)$

$u(x,y) = e^y \cos x$.

4. $f(z) = u(x,y) + iv(x,y)$

$v(x,y) = \ln(x^2 - y^2) - x - 2y$.

5. $f(z)$ $\text{Re} f(z) = 3x^2y - y^3$

$f(0) = 0$.

I

1.

2. $f(z)$ $L?$

3. $f(z)$

L

4.

5. $\int_L f(z) dz$

$\text{Re} f(z) = u(x,y)$ $\text{Im} f(z) = v(x,y)$?

6.

1.

$f(t)$

$f(t) = t - i^3$; $f(t) = \frac{t-i}{t+i}$; $f(t) = e^{it}$.

2.

$$\int_1^1 t^{-i^2} dt; \quad \int_0^1 \frac{dt}{t-i}; \quad \int_0^{2\varphi} e^{it} dt.$$

3.

$$f(z) = z^2 \quad 4; 4i,$$

4.

$$\begin{aligned} f(z) &= \operatorname{Re} z, L = 1-i; 1+i; & f(z) &= L \\ f(z) &= z^{-i^2}, L = z|z| e^{it}, 0 \leq t \leq \varphi; & f(z) &= \bar{z}, L = 1+i; \\ f(z) &= z - z^{-1} \bar{z}, L \end{aligned}$$

$$\begin{aligned}
f(z) &= iz - 1^2, L = 1 - i; 2i; \\
f(z) &= e^{iz}, L = 0; \varphi; \\
f(z) &= z \cos z, L = z |z - t - it^2, 0 \{ t \{ 1; \\
f(z) &= z^2 e^{-iz}, L = z ||z| - 2; \\
f(z) &= \frac{z^3}{z - 2}, L = z ||z| - 1; \\
f(z) &= \frac{e^z}{z - z - 2}, L = z |z - e^{it}, 0 \{ t \{ 2\varphi; \\
f(z) &= \frac{z}{z^2 - 4z - 3}, L = z ||z - 1| - 1; \\
f(z) &= \frac{1}{z z^2 - 1}, L = z ||\operatorname{Re} z| - |\operatorname{Im} z| - 2.
\end{aligned}$$

2. $a \ (a \neq 0) \quad \frac{dz}{z^2 - 9}$

$L: |z - i| = a.$

3.
$$L \frac{dz}{\sum_{k=1}^n (z - z_k)}$$

$L \quad z_k, k = \overline{1, n}?$

1. $f(z) \quad L$

$$\begin{aligned}
f(z) &= 2iz - 1^3, L = i; 1 - 2i; \\
f(z) &= e^{2iz}, L = \sum \frac{\varphi}{2}; \frac{\varphi}{2}; \\
f(z) &= z \sin z, L = z |z - t - \varphi i \sin t, 0 \{ t \{ \varphi; \\
f(z) &= z e^z, L = z ||z| - 1; \\
f(z) &= \frac{z^2 - i}{z - 2i}, L = z ||z| - 1; \\
f(z) &= \frac{e^z}{z - 2i - z - 2}, L = z |z - e^{it}, 0 \{ t \{ 2\varphi; \\
f(z) &= \frac{z}{z^2 - 5iz - 6}, L = z ||z - 2i| - 2; \\
f(z) &= \frac{z^2 - iz}{z z^2 - 1}, L = 2, -2 - 2i, 2 - 2i.
\end{aligned}$$

2.

$a \neq 0$

$$\int_L \frac{dz}{z^2 - a^2}$$

$L: |z| = a$

1.

2.

3.

4.

если $f(z)$ - аналитическая функция в некоторой области D , то $f'(z)$ также является аналитической в этой области

5.

D $f(z)$?

6.

7.

8.

9.

10.

11.

12.

G L

13.

14.

если функция $f(z)$ является аналитической в односвязной области D , то для любой замкнутой простой кусочно-гладкой кривой $\alpha \subset D$ имеет место формула

$$\begin{aligned} & \int_{\alpha} f(z) dz = \int_{\alpha} f(z) dz, \text{ если } z \in G, \\ & \frac{1}{2\pi i} \int_{\alpha} \frac{f(t) dt}{t - z} = \frac{1}{2} f(z), \text{ если } z \in \alpha, \\ & 0, \text{ если } z \in D \setminus (G \cup \alpha), \end{aligned}$$

где G - конечная область, ограниченная кривой α .

1.

$$\int_L \frac{\cos z}{z^2} dz \quad L = \{z: |z| = 1\};$$

$$\int_L \frac{\sin z}{z - \frac{\varphi}{3}} dz \quad L = \{z: |z - i| = 4\}.$$

2.

a, b

$e^{az};$
 $\sin az;$

$$e^{az} \cos bz.$$

$$3. \quad \int_{|z-a|}^R f(z) dz \quad r < |z-a| < R$$

1.

$$\int_L \frac{\cos z}{(z-i)^3} dz, \quad L = \{z: |z-i| = 1\};$$

$$\int_L \frac{e^z}{z-1} dz, \quad L = \{z: |z-1| = 1\}.$$

$$\cos az = ze^{az} = z \cos az.$$

$$\int_{|z-a|}^R \frac{f(z)}{a} dz \quad r < |z-a| < R$$

I

- 1.
- 2.
- 3.
- 4.
- 5.

1.

$$\int_{n=0}^{\infty} \frac{z-1-i}{3-4i} i^n; \quad \int_{n=0}^{\infty} \frac{z^n}{n!}; \quad \int_{n=0}^{\infty} \frac{2iz-3}{1-i^n}.$$

2.

$$c_0 = c_1.$$

$$\frac{z}{z^2-4} = \sum_{n=0}^{\infty} c_n z^{-1-i^n}$$

3.

$$\int_{|z-i|=2} \frac{z-1}{z-3-i} dz$$

4.

$$\sum_{n=0}^{\infty} c_n z^{-i^n}; \quad z_1 = 1-2i$$

$$z_2 = 3+5i, \quad z_3 = 0, \quad z_4 = 1, \quad z_5 = 2+i, \quad z_6 = 4+6i?$$

5.

$$f(z) = L$$

$$f(z) = \frac{z - 2i}{z^2 - 1 - z - 1^2}, L: |z| = 1; \quad f(z) = \frac{e^z}{z - i^3}, L: |z| = 2 \quad |10.$$

1.

$$\sum_{n=0}^{\infty} \frac{z - i^n}{1 - i^n}; \quad \sum_{n=0}^{\infty} \frac{1^n z^n}{n}; \quad \sum_{n=0}^{\infty} \frac{iz - 5^n}{3 - 4i^n}.$$

2.

$$\frac{1}{z^2 - 1} = \sum_{n=0}^{\infty} c_n z - 2 i^n$$

$$c_0 = c_1.$$

3.

$$|z - i| = 5$$

$$z = 1 - z = 3 - 10i?$$

4.

$$\sum_{n=0}^{\infty} c_n z - i^n$$

$$z_1 = 2 - i$$

$$z_2 = 3 - i, z_3 = 0, z_4 = 3i,$$

$$z_5 = 2 - i, z_6 = 1 - 6i?$$

5.

$$f(z) = \frac{z - i}{z^2 - 4}, L: |z - i| = 2; \quad f(z) = \frac{L}{z - i^{2012}}, L: |z - i| = 1.$$

6.

$$L: |z| = 1.$$

$$a \cup C \quad \int_L \frac{z^2 - 1}{z - a^2} dz$$

I

1.

$$f(z) = a.$$

2.

3.

$$f(z)$$

4.

$$f(z)$$

5.

1.

$$f(z) = z - a$$

$$f(z) = e^{iz}, a = 1; \quad f(z) = \sin^2 z, a = 0;$$

$$f(z) = \frac{z}{z^2 - 4}, a = 2i; \quad f(z) = \int_0^z \sin^2 d, a = 0.$$

2.

3. $\int_{|z|=2} \frac{e^{iz}}{z^2} dz; \quad \int_{|z|=1} \frac{\sin^2 z}{z} dz; \quad \int_{|z-2i|=1} \frac{z}{z^2 - 4z - 2i} dz.$
4. $w(0) = 1, w'(0) = 0.$
5. $f(z) = z^2 - 9z^2 - 9; \quad f(z) = \frac{\sin^3 z}{z}; \quad f(z) = z^2 - 1 - e^z - z - 1^2.$
6. $f(z) = z^2 \sin z; \quad f(z) = z e^{z^2} - 1.$
1. $f(z) = \delta z; \quad f(z) = \delta z; \quad f(\zeta) = \delta \zeta.$
2. $f(z) = ze^z, a = i; \quad f(z) = ch^2 z, a = 0;$
 $f(z) = \frac{z-2}{z^2-4}, a = 2; \quad f(z) = \int_0^z e^{-t^2} dt, a = 0.$
3. $\int_{|z-i|=2} \frac{ze^z}{z^2-1^3} dz; \quad \int_{|z|=1} \frac{ch^2 z}{z^4} dz; \quad \int_{|z-2|=1} \frac{z-2}{z^2-4z-2} dz.$
4. $zw'(z) = 2z^2 w'(z) - 30w - 6z^4 - 58z^3 - 8z - 30$
 $w(0) = 1, w'(0) = 0.$
5. $a = 0 \quad f(z)$
6. $f(z) = z \sin z - z^2; \quad f(z) = z e^{z^2} - 1 - z^3.$
1. $f(z) = \delta z; \quad f^2(z) = \delta^3 z; \quad c_1 f(z) + c_2 \delta z, c_1, c_2 \in \mathbb{C}.$

I

1.
2.

5.
$$F(z) = \sum_{n=0}^{\infty} \frac{1}{4^n} z^n$$

$$F(z) = \sum_{n=0}^{\infty} \frac{1}{3^n} z^n$$

6.
$$f(z) = \sum_{n=0}^{\infty} z^n$$

$z = 1 - i$

$f(z) ?$

I

- 1.
- 2.
- 3.
- 4.
- 5.

$f(z)$

- 6.

$f(z)$

z_0

- 7.

$f(z)$

- 8.

$f(z) ?$

- 9.

$f(z)$

- 10.

-

- 1.

$$\sum_{n=0}^{\infty} \frac{3^n z^n}{n^2 - 1}; \quad \sum_{n=0}^{\infty} \frac{z i^n}{2^n}; \quad \sum_{n=0}^{\infty} \frac{z^n}{n!} \frac{n}{z^{n-1}}$$

- 2.

$f(z)$

$z = z_0$

$$f(z) = \frac{z}{z - i}, z_0 = 0; \quad f(z) = z^2 \sin \frac{1}{z}, z_0 = 1.$$

- 3.

$f(z)$

$$f(z) = \frac{1}{\sin z}; \quad f(z) = z^3 e^{\frac{1}{z^2}}; \quad f(z) = \frac{1 - \cos 2z}{z^2}.$$

- 4.

$f(z) = \delta(z)$

z_0

$m = n$

z_0

$$f(z) = \delta(z); \quad \frac{f(z)}{\delta(z)}; \quad f(z) = \delta(z).$$

- 5.

$f(z)$

$$f(z) = \frac{1}{z^3 - z^5}, |z| = 1, \frac{1}{2}; \quad f(z) = z e^{\frac{1}{z}}, L: |z| = 1.$$

$$\sin \frac{1}{z}$$

6.

1.

$$f(z) = \frac{z^2 - 1}{z^2 - 5z + 6}, z_0 = 2; \quad f(z) = z^2 - 1 e^{\frac{1}{z^2}}, z_0 = 0.$$

2.

$$f(z) = \frac{z^2 - 1}{z^3 - 1}; \quad f(z) = \frac{1 - e^{z^2}}{z^4 - z^2}; \quad f(z) = \frac{e^{\frac{1}{z^2}}}{1 - \cos^2 z}.$$

3.

$$z = 0 \quad \frac{c_3}{z - i^3}$$

4.

$$f(z) \quad D$$

$$\frac{f(\zeta z)}{f(z)} \quad f(z) = 0.$$

I

1.

$$f(z)$$

2.

$$f(z)$$

3.

$$f(z) \quad z_0?$$

4.

$$\operatorname{Res}_{z_0} f(z) \quad z_0 \quad f(z)?$$

5.

6.

$$f(z)$$

1.

$$f(z) = \frac{z - 2}{z^2 - 1}; \quad f(z) = \frac{e^{iz}}{z^2 - z - \varphi}; \quad f(z) = \frac{\sin z}{z^4 \cos z}.$$

2.

$$\int_L \frac{z - 1}{z - 5} dz \quad L = \{z \mid |z| = 3\};$$

$$\int_L \frac{e^{iz}}{z - 2} dz \quad L = \{z \mid |\operatorname{Re} z| = |\operatorname{Im} z| = 3\};$$

$$\int_L \frac{dz}{\sin z} \quad L$$

3. $f(z) = \frac{z^{2021}}{z - 2022}$ z_0
 $z_0 = 0; z_0 = 2021; z_0 = 2022.$

4. $\int_L \frac{dz}{z - 1 - z^2 - i^2 z^2 - 2^3}$ $L: |z| = a$

1. $f(z) = \frac{z - 1}{z^2 - 1}; f(z) = \frac{\sin \varphi z - 1}{z^2 - z - 1}$

2. $\int_L \frac{z^3}{z - 1 - z^5} dz$ $L: |z - 1| = 1$

$$\int_L \frac{\cos \varphi z}{z - 1 - z^2} dz \quad L: |z| = \sqrt{\operatorname{Re}^2 z + \operatorname{Im}^2 z - 5}$$

$$\int_L \frac{\cos 2z dz}{\sin z} \quad L$$

3. $f(z) = \frac{z}{z - 2021 - 2022}$ $z_0,$

$z_0 = 0; z_0 = 2021; z_0 = 2022.$

4. $\int_L \frac{dz}{z - a - z^2 - ai^2 - z^2 - 2a^3}$ $L: |z| = 1$

5. $f(z) = \delta z - \frac{\zeta z}{z}$ z_0 δz

z_0

z_0 $z;$

z_0 n $z;$

z_0 m $z.$

1. $z^4 - ki^k = 0$

2. $f(z) = x^2 - y^2 + ik$ $\text{Re } f(z) = x^2 - y^2 + k$

3. $\int_{n=0}^{\infty} \frac{iz \cdot 3^n}{k \cdot i^n} dz$

4. $\int_L \frac{z-1}{z-10} dz$ $L: z = |z| = k$

5. $|z| = k$ $z^8 - kz^5 - z^2 - 1 = 0$

6.

6.1.

I.

II.

	0,5
	0,5
	1
	1
	1
	- 5

III.

1. $\int_{L} z^4 - ki^k - 0$
2. $f(z) = x^2 - y^2 - k$
 $f(0) = ik$.
3. $\int_{n=0}^{\infty} \frac{iz \cdot 3^n}{k \cdot i^n}$
4. $\int_L \frac{z-1}{z^k - 10} dz$ $L: |z| = k$.
5. $\int |z| dz$ k . $z^8 - kz^5 - z^2 - 1 - 0$

1.

		*)
1		

(*)

2.

1		4,75-5
2		3,75-4,5
3		3-3,5
4		

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

11.

-

12.

13.

14.

15.

12.

w arg z.

-

-

Вариант k

k

1.

2.

3.

$$z = k + i^k k.$$

4.

$$\oint_L \frac{\cos z}{(z - i)^k} dz \quad L = \{z : |z - i| = 1\}.$$

5.

$$f(z) = \frac{z^2}{z^2 - k^2}$$

1.

1		

2.

1		4,75-5
2		3,75-4,5
3		3-3,5
4		

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ДОКУМЕНТ ПОДПИСАН
ЭЛЕКТРОННОЙ ПОДПИСЬЮ

Сертификат: 03860A5C600B7AD99B742A1E041DE7D81B0

Владелец: Артеменков Михаил Николаевич

Действителен: с 04.10.2021 до 07.10.2022