Ⅰ. Cloze Tests

1. If $z_n = \left(\frac{2-i}{6}\right)^n + i\left(1+\frac{1}{n}\right)^n$, then $\lim\limits_{n\to+\infty} z_n =$ ________ .

2. If C denotes the circle centered at z_0 positively oriented and n is a positive integer, then $\int_C \frac{1}{(z-z_0)^n} dz =$ ________ .

3. The radius of the power series $\sum_{n=1}^{\infty} (n^2+1)z^n$ is ____________.

4. The singular points of the function $f(z) = \frac{\sin z}{z(z^2+1)}$ are ___________.

5. $\operatorname{Res}\left(\frac{\exp(z)}{z^{2n}},\ 0\right) =$ ______ , where n is a positive integer.

6. $\frac{d}{dz} e^z \cos^2 z =$ ____________________ .

7. The main argument and the modulus of the number $1-i$ are __________.

8. The square roots of $1+i$ are ____________.

9. The definition of $\cos z$ is _______________.

10. $\operatorname{Log}(1+i) =$ _________________________.

11. If $z_n = \left(\frac{1+i}{2}\right)^n + i\left(1+\frac{2}{n}\right)^n$, then $\lim\limits_{n\to+\infty} z_n =$ ________ .

12. If C denotes any simple closed contour and z_0 is a point inside C, then $\int_C \frac{1}{(z-z_0)^n} dz =$ ________ , where n is an integer.

13. The radius of the power series $\sum_{n=1}^{\infty} 3n^2 z^n$ is ____________.

14. The singular points of the function $f(z) = \frac{\cos z}{z^4(z^2-2)}$ are ___________.

15. $\operatorname{Res}\left(\frac{\exp(z)}{z^n},\ 0\right) =$ ______ , where n is a positive integer.

16. The main argument and the modulus of the number $2ie^{\frac{\pi}{4}i}$ are __________.

17. The integral of the function $w(t) = t^4(\sin t + i)$ on $[-1,1]$ is ___________.

18. The definition of $\cos z$ is ______________.

19. $\operatorname{Log}(1-i)=$______________________.

20. The solutions of the equation $e^{2zi}-1=0$ are __________ .

21. If $z_n=\left(\frac{3-i}{7}\right)^n+i\left(1+\frac{1}{n}\right)^n$, then $\lim\limits_{n\to+\infty} z_n=$________ .

22. If C denotes the circle centered at z_0 positively oriented and n is a positive integer, then $\int_C \frac{1}{(z-z_0)^n}dz=$________ .

23. The radius of convergence of $\sum\limits_{n=1}^{\infty}(3n^3+2n+1)z^n$ is ___________.

24. The singular points of the function $f(z)=\frac{\cos^2 z}{z(z^2+3)}$ are __________.

25. $\operatorname{Res}\left(\frac{\exp(z)}{z^{2n}},\ 0\right)=$______, where n is a positive integer.

26. $\frac{d}{dz}(e^z\sin^3 z)=$___________________ .

27. The main argument and the modulus of the number $1-i$ are _________.

28. The square roots of $1-i$ are ___________.

29. The definition of e^z is ______________.

30. $\operatorname{Log}(1-i)=$______________________.

31. If $z_n=\frac{n}{1-n}+i\left(1+\frac{2}{n}\right)^n$, then $\lim\limits_{n\to+\infty} z_n=$________ .

32. If C denotes the circle centered at z_0 and n is an integer, then $\frac{1}{2\pi i}\int_C \frac{1}{(z-z_0)^n}dz=$________ .

33. The radius of convergence of the power series $\sum\limits_{n=1}^{\infty}(n^2+1)z^n$ is ___________.

34. The singular points of the function $f(z)=\frac{\cos z}{z^2+1}$ are __________.

35. $\operatorname{Res}\left(\frac{\sin z}{z^{2n}},\ 0\right)=$______, where n is a positive integer.

36. $\frac{d}{dz}e^z\sin^2 z=$___________________ .

37. The main argument and the modulus of the number $1+i$ are __________.

38. The square roots of $Ai(A>0)$ are ____________.

39. The definition of $\cos z$ is _______________.

40. $\text{Log}(2+2i)=$_________________________.

41. If $z_n=\left(\frac{3-i}{5}\right)^n+i\left(1+\frac{1}{n}\right)^n$, then $\lim\limits_{n\to+\infty} z_n=$_________ .

42. If C denotes the circle centered at z_0 positively oriented and n is a positive integer, then $\int_C \frac{1}{(z-z_0)^n}dz=$________ .

43. The radius of convergence of $\sum\limits_{n=1}^{\infty}(n^3+2n+1)z^n$ is ____________.

44. The singular points of the function $f(z)=\frac{\cos z}{z(z^2+3)}$ are ___________.

45. $\text{Res}\left(\frac{\exp(z)}{z^{2n}},\ 0\right)=$_______, where n is a positive integer.

46. $\frac{d}{dz}(e^z\sin^5 z)=$____________________ .

47. The main argument and the modulus of the number $1-i$ are __________.

48. The square roots of $1+i$ are ____________.

49. The definition of e^z is _______________.

50. $\text{Log}(1+i)=$_________________________.

51. If $z_n=\frac{n}{4+n}+i\left(1+\frac{3}{n}\right)^n$, then $\lim\limits_{n\to+\infty} z_n=$_________ .

52. If C denotes the circle centered at z_0 and n is an integer, then $\frac{1}{2\pi i}\int_C \frac{z^n}{(z-z_0)^n}dz=$________ .

53. The radius of convergence of the power series $\sum\limits_{n=1}^{\infty}(3n^2+5)z^n$ is ____________.

54. The singular points of the function $f(z)=\frac{\cos z+\sin z}{z^2+1}$ are ___________.

55. $\text{Res}\left(\frac{\sin z}{z^{2n}},\ 0\right)=$_______, where n is a positive integer.

56. $\dfrac{d}{dz}e^{5z}\sin^2 z =$ ____________________ .

57. The main argument and the modulus of the number $i-1$ are __________.

58. The square roots of $Bi(B>0)$ are ____________.

59. The definition of $\cos z$ is _______________.

60. $\mathrm{Log}(5+5i)=$_________________________.

61. If $z_n=\left(\dfrac{1+i}{2}\right)^n+i\left(1+\dfrac{2}{n}\right)^n$, then $\lim\limits_{n\to+\infty} z_n =$_________ .

62. If C denotes any simple closed contour and z_0 is a point inside C, then $\displaystyle\int_C \frac{1}{(z-z_0)^n}dz=$________, where n is an integer.

63. The radius of convergence of the power series $\displaystyle\sum_{n=1}^{\infty}3n^2z^n$ is ____________.

64. The singular points of the function $f(z)=\dfrac{\cos z}{z^4(z^2-2)}$ are ___________.

65. $\mathrm{Res}\left(\dfrac{\exp(z)}{z^n},\ 0\right)=$______, where n is a positive integer.

66. The main argument and the modulus of the number $2ie^{\frac{\pi}{4}i}$ are __________.

67. The integral of the function $w(t)=t^4(\sin t+i)$ on $[-1,1]$ is ___________.

68. The definition of $\cos z$ is _______________.

69. $\mathrm{Log}(1-i)=$_________________________.

70. The solutions of the equation $e^{2zi}-1=0$ are ___________ .

71. If $z_n=\left(\dfrac{1+i}{3}\right)^n+i\left(1+\dfrac{3}{n}\right)^n$, then $\lim\limits_{n\to+\infty} z_n =$_________ .

72. If C denotes any simple closed contour and z_0 is a point inside C, then $\displaystyle\int_C \frac{\sin z}{(z-z_0)^n}dz=$________, where n is an integer.

73. The radius of convergence of the power series $\displaystyle\sum_{n=1}^{\infty}(3n^2-6)z^n$ is ____________.

74. The singular points of the function $f(z)=\dfrac{\cos z+z^4}{z^4(z^2-2)}$ are ___________.

75. $\mathrm{Res}\left(\frac{\exp(z)}{z^m},\ 0\right) =$ ______ , where m is a positive integer.

76. The main argument and the modulus of the number $5ie^{\frac{\pi}{4}i}$ are _________.

77. The integral of the function $w(t) = t^2(\sin t + ti)$ on $[-1,1]$ is __________.

78. The definition of $\sin z$ is ______________.

79. $\mathrm{Log}(1-i) =$________________________.

80. The solutions of the equation $e^{3zi} - 1 = 0$ are __________ .

81. If $z_n = \left(\frac{3-i}{5}\right)^n + i\left(1+\frac{1}{n}\right)^n$, then $\lim\limits_{n\to+\infty} z_n =$ ________ .

82. If $z_n = \frac{n}{1-n} + i\left(1+\frac{2}{n}\right)^n$, then $\lim\limits_{n\to+\infty} z_n =$ ________ .

83. If $z_n = \left(\frac{1+i}{2}\right)^n + i\left(1+\frac{2}{n}\right)^n$, then $\lim\limits_{n\to+\infty} z_n =$ ________ .

84. If C denotes the circle centered at z_0 positively oriented and n is a positive integer，then $\oint_C \frac{1}{(z-z_0)^n} dz =$ ________ .

85. If C denotes the circle centered at z_0 and n is an integer，then $\frac{1}{2\pi i}\oint_C \frac{1}{(z-z_0)^n} dz =$ ________ .

86. The radius of the power series $\sum_{n=1}^{\infty}(n^2+1)z^n$ is ___________.

87. The radius of the power series $\sum_{n=1}^{\infty}(n^3+2n+1)z^n$ is ___________.

88. The radius of the power series $\sum_{n=1}^{\infty}3n^2z^n$ is ___________.

89. The singular points of the function $f(z) = \frac{\cos z}{z^4(z^2-2)}$ are __________.

90. The singular points of the function $f(z) = \frac{\sin z}{z(z^2+3)} + z^3$ are __________.

91. The singular points of the function $f(z) = \frac{\cos z}{z^2+1}e^z$ are __________.

92. $\operatorname{Res}\left(\frac{\sin z}{z^{2n}},\ 0\right) =$ _______, where n is a positive integer.

93. $\operatorname{Res}\left(\frac{\exp(z)}{z^{2n}},\ 0\right) =$ _______, where n is a positive integer.

94. $\frac{d}{dz}(e^z \sin^5 z) =$ ____________________ .

95. $\operatorname{Res}\left(\frac{\exp(z)}{z^{n}},\ 0\right) =$ _______, where n is a positive integer.

96. The main argument and the modulus of the number $1-i$ are __________.

97. The main argument and the modulus of the number $2ie^{\frac{\pi}{4}i}$ are __________.

98. The square roots of $1+i$ are ____________.

99. The definition of e^z is ________________.

100. The definition of $\cos z$ is ________________.

101. $\operatorname{Log}(2+2i) =$ __________________________.

102. The integral of the function $w(t) = t^4(\sin t + i)$ on $[-1,1]$ is ___________

103. $i^{2i+1} =$ ________________________________.

104. $\operatorname{Log}(1+i) =$ __________________________.