



# MATHS

## BOOKS - MAXIMUM PUBLICATION

### COMPLEX NUMBER & QUADRATIC EQUATIONS

#### Example

1. Express the following in  $a + ib$  form

$$(2 - 4i) + (5 + 3i)$$



Watch Video Solution

2. Express the following in  $a + ib$  form

$$(1 - i) - (-1 + 6i)$$



Watch Video Solution

3. Express the following in  $a + ib$  form

$$3(7 + 7i) + i(7 + 7i)$$



Watch Video Solution

4. Express the following in  $a + ib$  form

$$\left(\frac{1}{5} + i\frac{2}{5}\right) - \left(4 + \frac{5}{2}i\right)$$



[Watch Video Solution](#)

5. Express the following in  $a + ib$  form

$$(-5i)\left(\frac{1}{8}i\right)$$



[Watch Video Solution](#)

6. Express the following in  $a + ib$  form

$$(-i)(2i)\left(-\frac{1}{8}i\right)^3$$



[Watch Video Solution](#)

7. Express the following in  $a + ib$  form

$$i^{99}$$



[Watch Video Solution](#)

8. Express the following in  $a + ib$  form

$$i^{111} + i^{222} + i^{333}$$



[Watch Video Solution](#)

9. Express the following in  $a + ib$  form

$$(7 - i)(2 + 7i)$$



[Watch Video Solution](#)

**10.** Express the following in  $a + ib$  form

$$(-1 - i)(4 + 2i)$$



**Watch Video Solution**

**11.** Express the following in  $a + ib$  form

$$(5 - 3i)^2$$



**Watch Video Solution**

**12.** Express the following in  $a + ib$  form

$$\left(\frac{1}{3} + 3i\right)^3$$



**Watch Video Solution**

**13.** Find the multiplicative inverse of the following,

$$3 - 4i$$



**Watch Video Solution**

14. Find the multiplicative inverse of the following,

$$2 - 3i$$



Watch Video Solution

15. Find the multiplicative inverse of the following,

$$\sqrt{5} + 3i$$



Watch Video Solution



16. Express the following in  $a + ib$  form.

$$\frac{1 + i}{1 - i}$$



Watch Video Solution

17. Express the following in  $a + ib$  form.

$$\frac{2 - 4i}{1 - 3i}$$



Watch Video Solution

**18.** Express the following in  $a + ib$  form.

$$\frac{3 + 2i}{5 + i}$$



**Watch Video Solution**

**19.** Express the following in  $a + ib$  form.

$$\frac{6 + 3i}{2 - i}$$



**Watch Video Solution**

20. Express the following in  $a + ib$  form.

$$\frac{(3 - 2i)(2 + 3i)}{(1 + 2i)(2 - i)}$$



[Watch Video Solution](#)

21. Convert the following into form.

$$1 + i$$



[Watch Video Solution](#)

22. Convert the following into form.

$$-1 + i$$



**Watch Video Solution**

23. Convert the following into form.

$$\sqrt{3} - i$$



**Watch Video Solution**

**24.** Convert the following into form.

$$\frac{5 - \sqrt{3}i}{4 + 2\sqrt{3}i}$$



**Watch Video Solution**

**25.** If  $z_1 = 2 - i$ ,  $z_2 = 1 + i$

Find  $|z_1 + z_2 + 1|$  and  $|z_1 - z_2 + i|$ .



**Watch Video Solution**

26. If  $z_1 = 2 - i$ ,  $z_2 = 1 + i$

Hence find  $\left| \frac{z_1 + z_2 + 1}{z_1 - z_2 + i} \right|$



Watch Video Solution

27. Find the square root of  $-15 - 8i$ .



Watch Video Solution

28. Consider the complex number

$$\frac{i - 1}{\cos \frac{\pi}{3} + i \sin \frac{\pi}{3}}$$

express in  $a + ib$  form.



Watch Video Solution

**29.** Consider the complex number

$$\frac{i - 1}{\cos \frac{\pi}{3} + i \sin \frac{\pi}{3}}$$

Convert into polar form.



Watch Video Solution

**30.** Express the complex number

$$\frac{2 - i}{(1 - i)(1 + 2i)} \text{ in form } a + ib$$



[Watch Video Solution](#)

**31.** Solve the equation  $27x^2 - 10x + 1 = 0$ .



[Watch Video Solution](#)

**32.** For what value of  $x$  and  $y$

$$4x + i(3x - y) = 3 - 6i$$



[Watch Video Solution](#)



**33.** Solve the equation  $21x^2 - 28x + 10 = 0$



**Watch Video Solution**

**34.** consider the complex number  $z = \frac{1 + i}{1 - i}$

Write  $z$  in  $a + ib$  form.

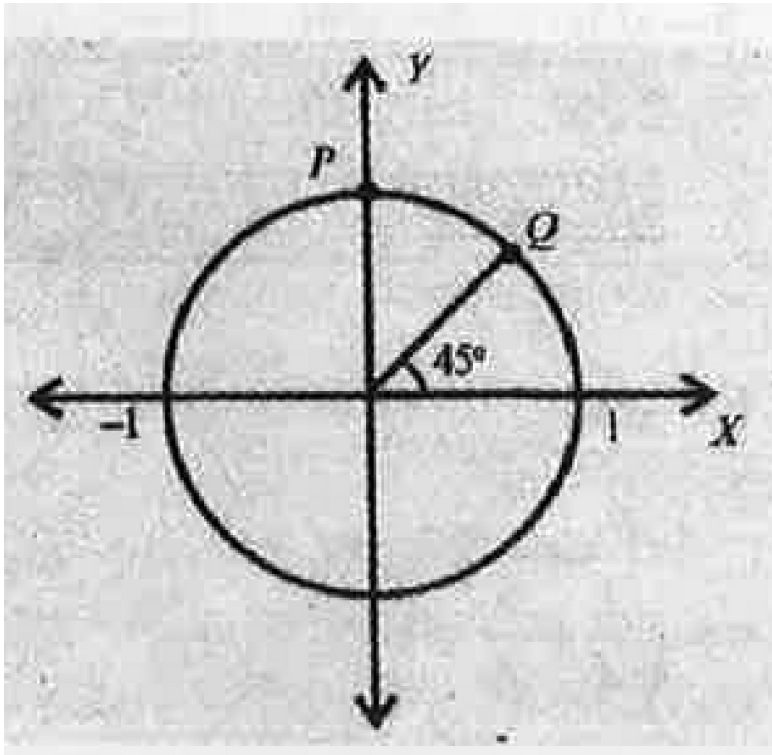


**Watch Video Solution**

**35.** consider the complex number  $z = \frac{1 + i}{1 - i}$

In the figure radius of the circle is 1. Write the

polar form of the complex number represent  
by the points P and Q.



**Watch Video Solution**

**36.** consider the complex number  $z = \frac{1 + i}{1 - i}$

Find the square root of  $i$ .



**Watch Video Solution**

**37.** Express the complex number  $\frac{3 - \sqrt{-16}}{1 - \sqrt{-9}}$

in the form  $a + ib$ .



**Watch Video Solution**

**38.** Represent the complex number

$$\frac{5 + i\sqrt{3}}{-4 + 2\sqrt{3}i}$$
 in the polar form.



**Watch Video Solution**

**39.** Solve the equation  $ix^2 - x + 12i = 0$



**Watch Video Solution**

**40.** Find the modulus and argument of the

complex number  $\frac{1 + i}{1 - i}$ . Find its multiplicative

inverse in the form  $a + ib$ .



**Watch Video Solution**

**41.** Express the complex number  $z = \frac{5 + i}{2 + 3i}$

in the form  $a + ib$ .



**Watch Video Solution**

**42.** Represent  $z$  in the polar form.



**Watch Video Solution**

**43.** Consider the complex number

$$Z = \frac{2 + i}{(1 + i)(1 - 2i)}$$

Express  $Z$  in the form of  $a + ib$ .



**Watch Video Solution**

**44.** Consider the complex number

$$Z = \frac{2 + i}{(1 + i)(1 - 2i)}$$

Represent  $Z$  in the polar form.



**Watch Video Solution**

45. Express  $\frac{1}{1-i}$  in the form  $a + ib$



Watch Video Solution

46. Express  $\frac{1}{1-i}$  in polar form.



Watch Video Solution

47. Represent the complex number  $1 + i\sqrt{3}$  in the polar form.



Watch Video Solution

**48.** Express  $\frac{2 + i}{2 - i}$  in the form  $a + ib$ .



**Watch Video Solution**

**49.** Consider the complex number

$$z = \frac{5 - \sqrt{3}i}{4 + 2\sqrt{3}i}$$



**Watch Video Solution**



**50.** Express the following complex number in the form  $a + ib$

$$(1 + i) - (1 - 6i) + (2 + i).$$



**Watch Video Solution**

**51.** Represent the complex number  $z = 1 + i$  in the polar form.



**Watch Video Solution**

52. Represent the complex number  $\sqrt{3} + i$  in the polar form.



Watch Video Solution

53. Solve:  $\sqrt{5}x^2 + x + \sqrt{5} = 0$



Watch Video Solution

54. Express  $\frac{1 + i}{1 - i}$  in the form  $a + ib$ .



Watch Video Solution

55. Represent the  $\frac{1+i}{1-i}$  in the polar form.



Watch Video Solution

56. Solve the quadratic Equation

$$-x^2 + x - 2 = 0$$



Watch Video Solution

57. Express  $i$  in the form  $r(\cos \theta + i \sin \theta)$



Watch Video Solution

58. If  $i = \sqrt{-1}$  find the sum of

$$i + i^2 + i^3 + \dots + i^{99}$$



Watch Video Solution

59. Convert into  $\frac{1 - i}{\cos \frac{\pi}{4} + i \sin \frac{\pi}{4}}$

$a + ib$  form.



Watch Video Solution

60. Convert into  $\frac{1 - i}{\cos \frac{\pi}{4} + i \sin \frac{\pi}{4}}$

Polar form.



Watch Video Solution

61. If  $z = \sqrt{3} + i$ , find the conjugate of  $Z$ .



Watch Video Solution

62. Write polar form of the complex number

$$z = \sqrt{3} + i$$



Watch Video Solution

63. Solve  $2x^2 + 3x + 1 = 0$



Watch Video Solution

64. Solve:  $\sqrt{3}x^2 + x + \sqrt{3} = 0$ .



Watch Video Solution

65. Represent the complex number

$z = 1 + i\sqrt{3}$  in the polar form.



Watch Video Solution

66. the conjugate of  $1 - 2i$  is .....



Watch Video Solution

67. Express the complex number  $\frac{2 + 3i}{1 - 2i}$  in the form  $a + ib$ .



Watch Video Solution

68. Solve  $x^2 + 3x + 5 = 0$



Watch Video Solution

69. Represent the complex number  $1 + \sqrt{3}i$  in the polar form.



Watch Video Solution



70. Find the square root of the complex number  $-7 - 24i$ .



Watch Video Solution

71. What is  $i^{-35}$ ?

A.  $i$

B.  $-i$

C. 1

D. -1

**Answer: A**



**Watch Video Solution**

**72.** Represent the complex number  $\sqrt{3} + i$  in the polar form.



**Watch Video Solution**

**73.** Which one of the following is the real part and imaginary part of the complex number:

$$\left(\frac{1+i}{1-i}\right) - \left(\frac{1-i}{1-i}\right)?$$

A. 0 and 1

B. 0 and 2

C. 3 and 2

D. 0 and 4

**Answer: B**



**Watch Video Solution**

74. express the complex number  $i$  in the polar form.



[Watch Video Solution](#)

75. Solve:  $\sqrt{5}x^2 + x + \sqrt{5} = 0$



[Watch Video Solution](#)

76. Write the real and imaginary part of the complex number  $-3 + \sqrt{-7}$



[Watch Video Solution](#)

77. Find the modulus and argument of the complex number  $1 + i\sqrt{3}$ .



[Watch Video Solution](#)

78. Solve:  $x^2 - 2x + 3 = 0$ .



[Watch Video Solution](#)

79.  $i^{18} = \dots\dots$

A. 1

B. 0

C. -1

D.  $i$

**Answer: C**



**Watch Video Solution**

**80.** Represent the complex number  $\sqrt{3} + i$  in the polar form.



**Watch Video Solution**

**81.** Find the square root of the complex number  $-8 - 6i$ .



**Watch Video Solution**