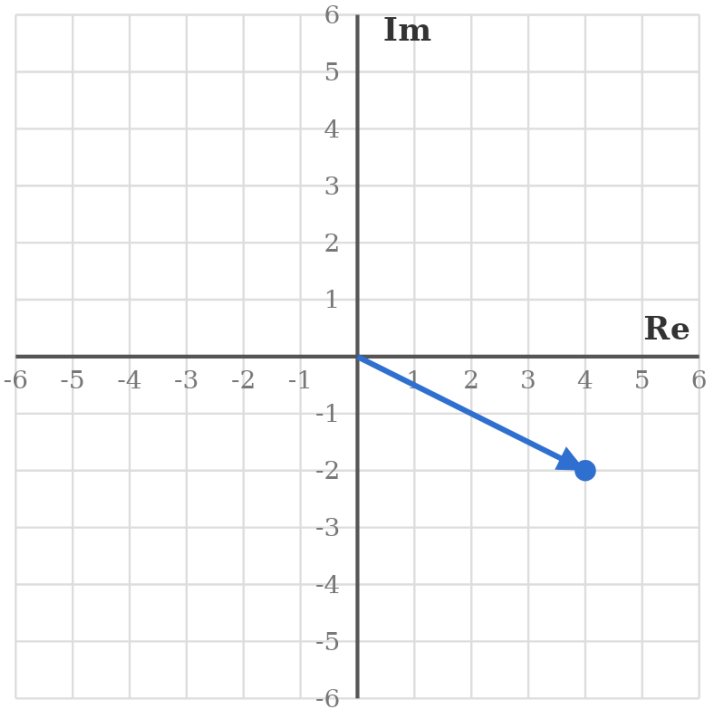
Name

Complex Numbers - Polar Operations

1 What is the modulus of the plotted complex number?



A 6

B $2\sqrt{3}$

C $2\sqrt{5}$

D $2\sqrt{6}$

2 What is the principal argument of this complex number, in degrees?

$$-\sqrt{2}+\sqrt{2}\,i$$

A $-135°$

B $45°$

C $135°$

3 Which rectangular form represents this complex number?

$$4\left(\cos 135° + i\sin 135°\right)$$

A $-2\sqrt{2}+2\sqrt{2}\,i$

B $-2\sqrt{2}-2\sqrt{2}\,i$

C $2\sqrt{2}+2\sqrt{2}\,i$

4 What are the real and imaginary components of this complex number?

$$2\left(\cos 300° + i\sin 300°\right)$$

A $a=1,\ b=\sqrt{3}$

B $a=-1,\ b=-\sqrt{3}$

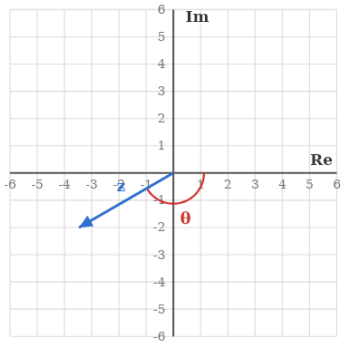
C $a=-\sqrt{3},\ b=1$

D $a=1,\ b=-\sqrt{3}$

Name

Complex Numbers - Polar Operations

5 What is the principal argument of the plotted complex number, in radians?



A $\frac{5\pi}{6}$

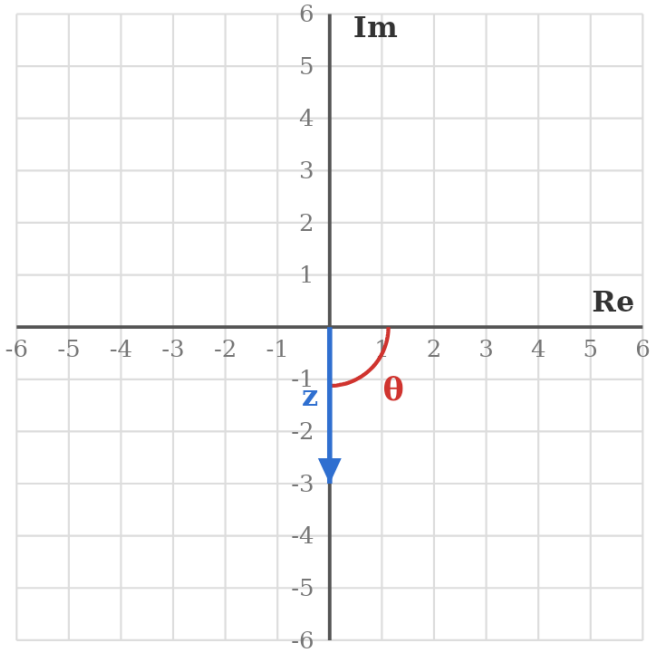
B $-\frac{\pi}{3}$

C $-\frac{\pi}{6}$

D $-\frac{5\pi}{6}$

E $\frac{2\pi}{3}$

6 Which polar form represents the plotted complex number?



A $3\left(\cos 270° + i \sin 270°\right)$

B $3\left(\cos 90° + i \sin 90°\right)$

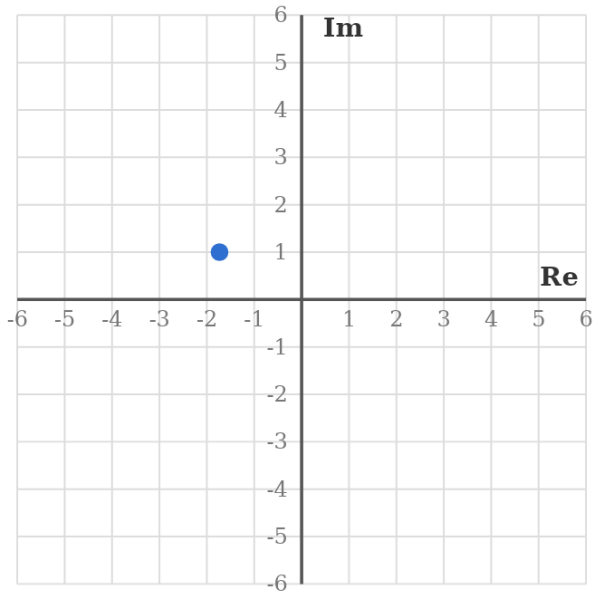
Name

Complex Numbers - Polar Operations

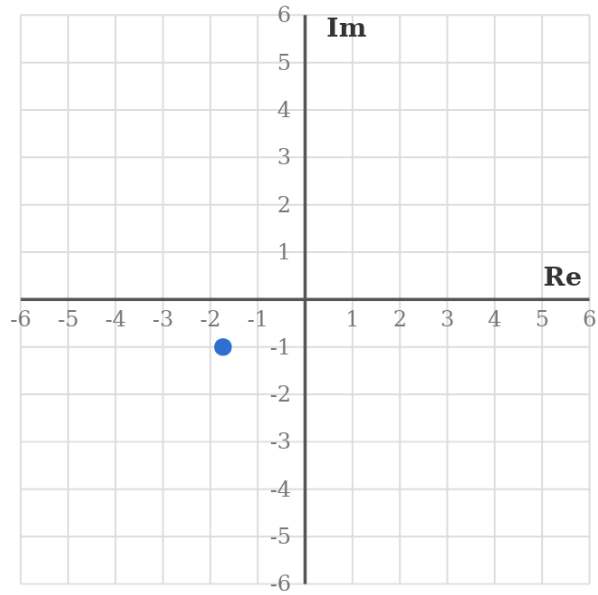
7 Which graph plots this complex number?

$$2\left(\cos 210° + i \sin 210°\right)$$

A



B



8 When you multiply two complex numbers in polar form, what is the modulus of the product?

A 5	B 0
C 4	

9 When you multiply two complex numbers in polar form, what is the argument of the product?

A $90°$	B $0°$
C $150°$	D $180°$

10 What is the product of these two complex numbers in polar form?

A	$3\left(\cos 165° + i \sin 165°\right)$
B	$3\left(\cos 255° + i \sin 255°\right)$
C	$4\left(\cos 165° + i \sin 165°\right)$
D	$3\left(\cos 90° + i \sin 90°\right)$

11 When you divide two complex numbers in polar form, what is the modulus of the quotient?

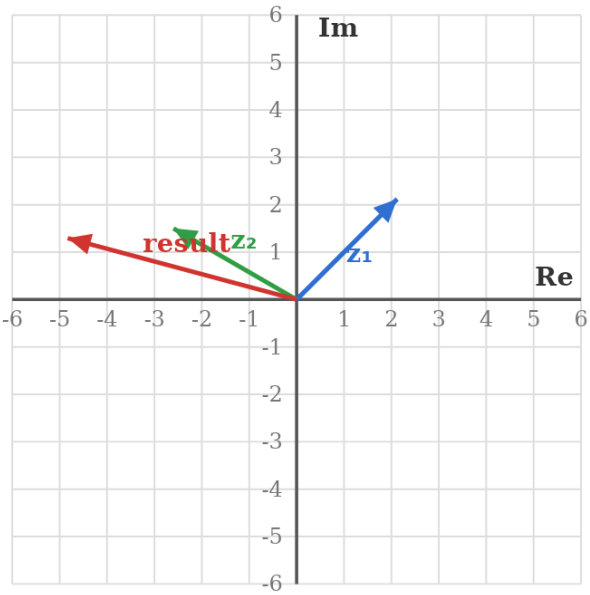
A 2	B 1

Name

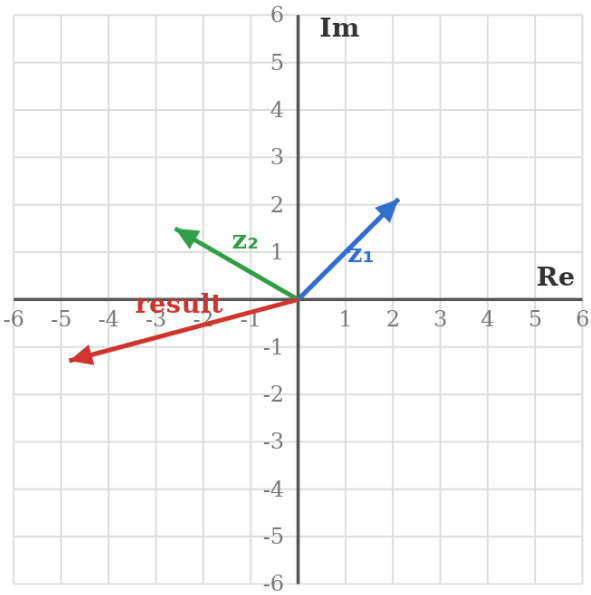
Complex Numbers - Polar Operations

12 Which diagram shows the product z_1z_2 (scaling and rotation of z_1 by z_2)?

A



B



13 When you divide two complex numbers in polar form, what is the argument of the quotient?

A $330°$	B $30°$
C $210°$	D $60°$

14 What is the quotient of these two complex numbers in polar form?

A	$9\left(\cos 300° + i\sin 300°\right)$
B	$2\left(\cos 240° + i\sin 240°\right)$
C	$18\left(\cos 300° + i\sin 300°\right)$
D	$2\left(\cos 300° + i\sin 300°\right)$

15 Using De Moivre's theorem, what is the modulus of z^{2}?

$$z = 1\left(\cos 45° + i\sin 45°\right)$$

A 2	B 1

16 Using De Moivre's theorem, what is the argument of z^{3}?

$$z = 1\left(\cos 90° + i\sin 90°\right)$$

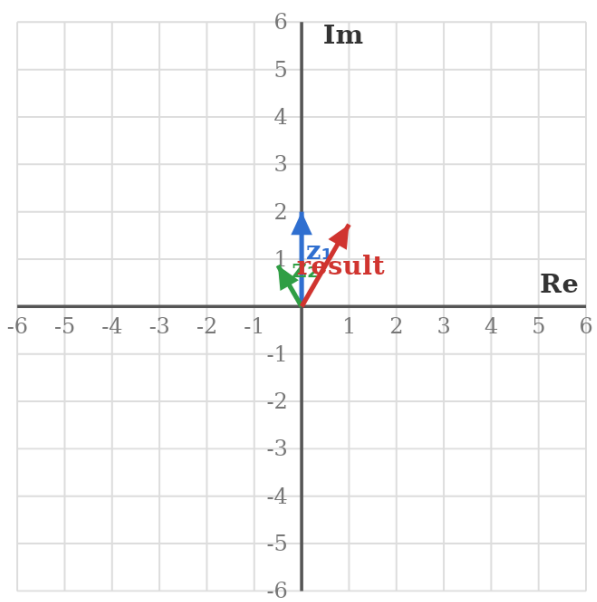
A $270°$	B $90°$
C $300°$	D $93°$

Name

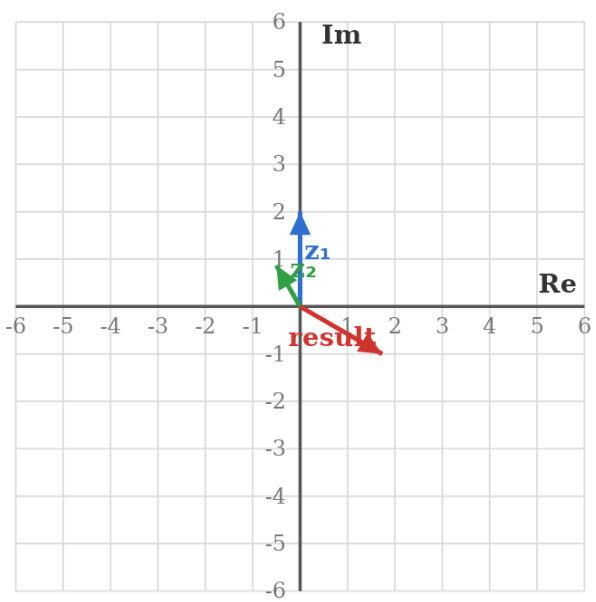
Complex Numbers - Polar Operations

17 Which diagram shows the quotient z_1/z_2 (inverse scaling and rotation of z_1 by z_2)?

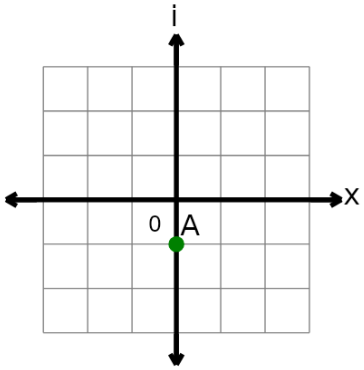
A



B

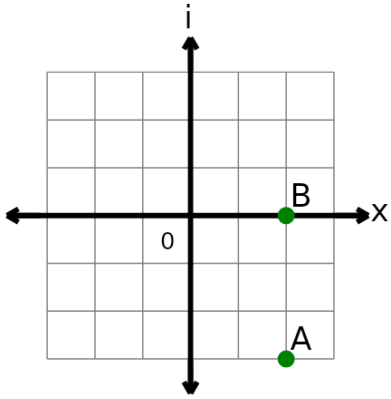


18 Identify the point labelled 'A' on the complex plane



A $1i$	B $-2-1i$
C -1	D $-2i$
E $-1i$	F 0

19 Add A + B on the complex plane



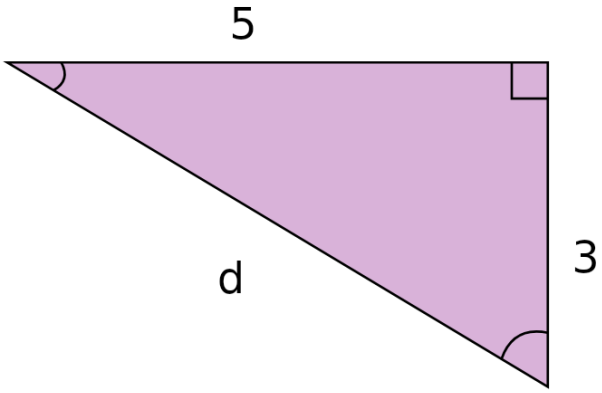
A $5-3i$	B $4-3i$
C $3-3i$	D $-4-3i$
E $4-1i$	F $4-2i$

Name



Complex Numbers - Polar Operations

20 Find the length of the missing side as a decimal value based on the Pythagorean theorem



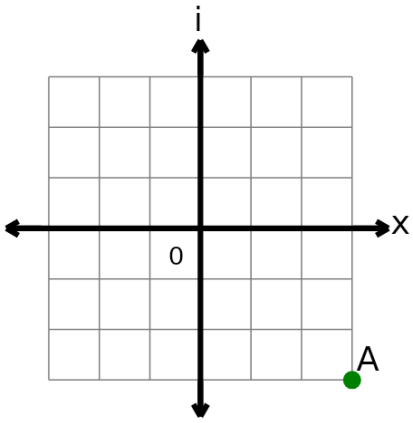
A d=3.31	B d=1.63	C d=6.67
D d=5.83	E d=2.47	F d=15

21 Find the complex conjugate of this complex number

$$3+4i$$

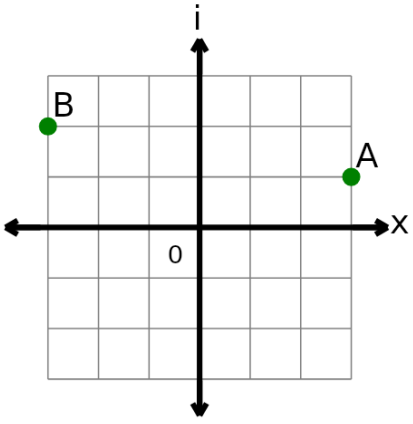
A $3+4i$	B $5-4i$
C $2-4i$	D $-3+4i$
E $3-4i$	F $-3-4i$

22 Find the absolute value of the point labelled 'A' on the complex plane



A 1.7	B 7.6	C 6.8
D 5.9	E 4.2	F 3.4

23 Find the distance between points A and B on the complex plane

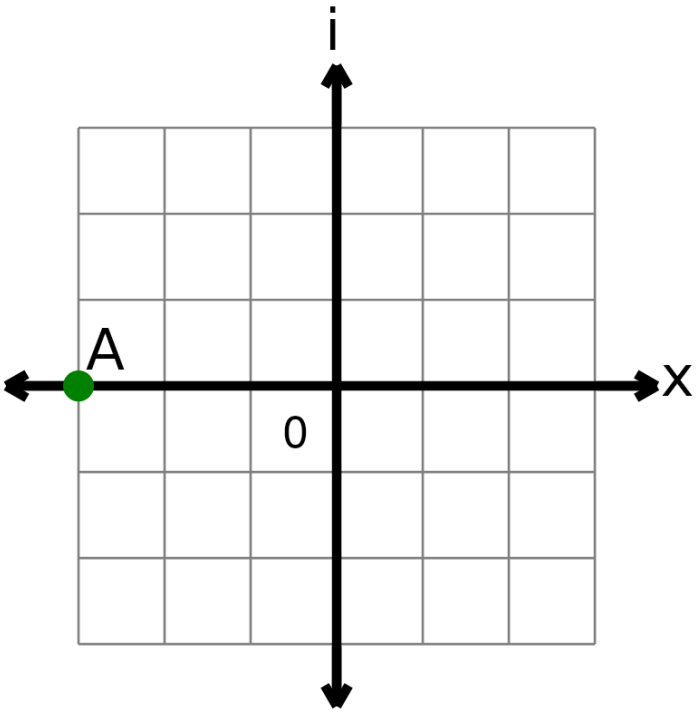


A 6.9	B 6.1	C 7.8
D 2.7	E 5.2	F 3.6

Name

Complex Numbers - Polar Operations

24 Find the complex conjugate of the point labelled 'A' on the complex plane



A

-5

B

-3

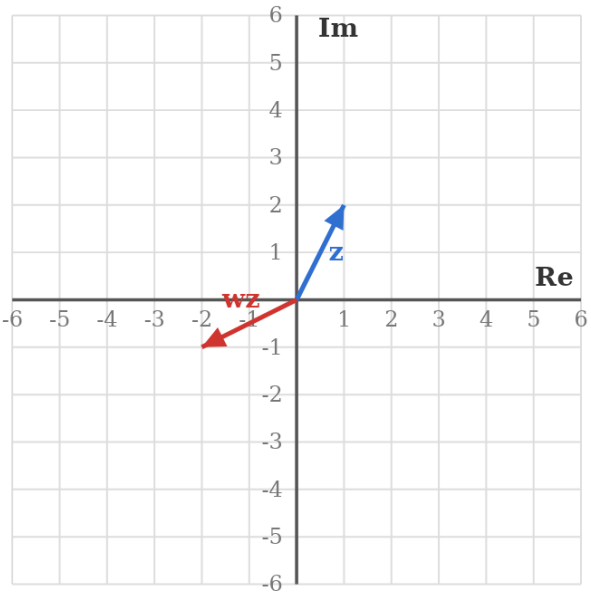
C

3

25 Which diagram shows the result of this multiplication?

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

A



B

