Complex numbers

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## Example

1. Convert into Polar form.
2. Convert into Cartesian form.

## Answer

1. We want to write in the form , where and

We first find :

Note: -5 is also an answer to , however we usually write to be positive as it is representing a length.

Then, we find

Note: We always work in Radians when writing complex numbers in Polar form.

Now, we plug in these values to get: .



The Cartesian form ( is found using the formulae:

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So, we have , and , which means that we have

## Questions

1. Convert the following to Polar form:
2. Convert the following to Cartesian form:
3. Find the modulus and the argument of the following:
4. Calculate the following:

Complex numbers

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## Answers

1. We convert the values from the form into the form using and

Therefore,

Therefore, .

Therefore,

1. We convert the values from the form into the form using and
2. and , so we have that
3. and , so we have that
4. and , so we have that .

Complex numbers

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1. We find the modulus and argument of using and
2. ,
3. ,
4. ,
5. ,
6. When it would be time consuming to multiply many complex numbers together, we can convert them into Polar form and then perform the power operator.
7. Using the FOIL method: . Since we know that so we have
8. We first convert into Polar form:

, and so

We then find

1. We convert into Polar form:

, and , so

We then find .

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1. We convert into Polar form:

, and , so

We then find

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