Answer on Question #76207 – Math – Algebra

Question

Write in polar form, draw a picture, show steps.
-12R + 5U
I have looked everywhere in my text book and can't find a thing like this

Solution

The complex number -12 + 5j

We find *r* (the length of the vector) and Θ (the angle made with the real axis):

From Pythagoras, we have:

$$r = \sqrt{(-12)^2 + (5)^2} = 13$$

From basic trigonometry

$$\tan(\Theta) = \frac{5}{-12} = -0.41667$$

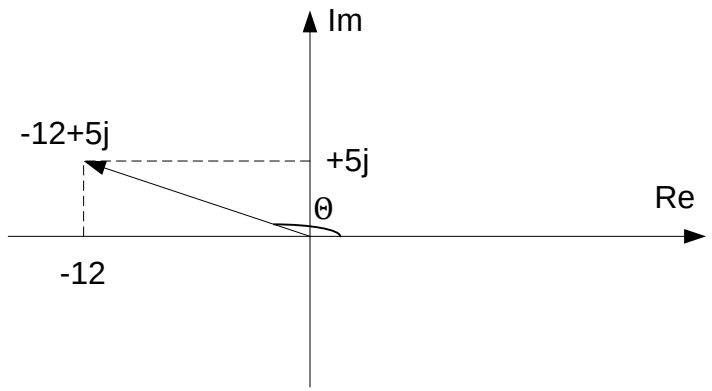
From here $\Theta = 157.4^{\circ}$

So we can write the **polar form** of a complex number as:

$$x + jy = r \cdot (\cos\Theta + j \cdot \sin\Theta) = 13 \cdot (\cos 157.4^{\circ} + j \cdot \sin 157.4^{\circ})$$

or

$$13 \cdot (\cos\frac{7\pi}{8} + j \cdot \sin\frac{7\pi}{8})$$



Answer: $13 \cdot (\cos\frac{7\pi}{8} + j \cdot \sin\frac{7\pi}{8})$