Find the fourth roots of z=-7-24i. Answer in polar form.
Convert to polar form:

$$r = \sqrt{(-7)^2 + (-24)^2} = 25$$

$$\theta = tan^{-1}\left(\frac{-24}{-7}\right) = 73.7398^o$$

Check angle quandrant: WRONG QUANDRANT!
Add 180° = 253.7398^o

$$r(cos\theta + isin\theta) = 25\big(cos(253.7398^o) + isin(253.7398^o)\big)$$

Take the root:

Formula: $z^{1/n} = r^{1/n}\left(cos\left(\frac{\theta}{n} + \frac{360^o k}{n}\right) + isin\left(\frac{\theta}{n} + \frac{360^o k}{n}\right)\right)$ for k=0 to n-1

Plug in:

$$z^{1/4} = r^{1/4}\left(cos\left(\frac{253.7398^o}{4} + \frac{360^o k}{4}\right) + isin\left(\frac{253.7398^o}{4} + \frac{360^o k}{4}\right)\right)$$

$$z^{1/4} = 25^{1/4}\big(cos(63.4349^o + 90^o * k) + isin(63.4349^o + 90^o * k)\big)$$

Root 1: k=0, $z^{1/4} = 5^{1/2}\big(cos(63.4349^o) + isin(63.4349^o)\big)$
add 90°

Root 2: k=1, $z^{1/4} = 5^{1/2}\big(cos(153.4349^o) + isin(153.4349^o)\big)$
add 90°

Root 3: k=2, $z^{1/4} = 5^{1/2}\big(cos(243.4349^o) + isin(243.4349^o)\big)$
add 90°

Root 4: k=3, $z^{1/4} = 5^{1/2}\big(cos(333.4349^o) + isin(333.4349^o)\big)$
add 90°

CHECK WITH CALCULATOR:

$$25^{1/4} = 2.2361$$
$$cos(63.4349^o) = .4472, sin(63.4349^o) = .8944,$$
$$cos(153.4349^o) = -.8944, sin(153.4349^o) = .4472,$$
$$cos(243.4349^o) = -.4472, sin(243.4349^o) = -.8944,$$
$$cos(333.4349^o) = .8944, sin(333.4349^o) = -.4472,$$

Root 1: 2.23621*.4472+(2.23621*.8944)i=1+2i
    $(1+2i)^4$=-7-24i

Root 2: 2.23621*-.8944+(2.23621*.4472)i=-2+1i
    $(-2+1i)^4$=-7-24i

Root 3: 2.23621*-.4472+(2.23621*-.8944)i=-1-2i
    $(-1-2i)^4$=-7-24i

Root 4: 2.23621*.8944+(2.23621*-.4472)i=2-1i
    $(2-1i)^4$=-7-24i