

Re: Help for a basic problem

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- *From:* Bob Walton <see.sig@xxxxxxxxxxxxxxxxxxxx>
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dm wrote:

Can I get a symbolic formula of x , while x satisfies a complex equation, $x^3 = a+bi$, where a and b are real-valued variables?

I was trying to figure it out using $x = R_x+I_x*i$, but it turns out to be a very complex equation.

If no analytical solution is available, how can I get it, by numerical method?

....

$$X = (-\text{SQRT}(3)*(B^2+A^2)^{(1/6)} * \text{SIN}(\text{ATAN2}(B,A)/3) - (B^2+A^2)^{(1/6)} * \text{COS}(\text{ATAN2}(B,A)/3))/2 + \%I*(\text{SQRT}(3)*(B^2+A^2)^{(1/6)} * \text{COS}(\text{ATAN2}(B,A)/3) - (B^2+A^2)^{(1/6)} * \text{SIN}(\text{ATAN2}(B,A)/3))/2$$

$$X = -((B^2+A^2)^{(1/6)} * \text{COS}(\text{ATAN2}(B,A)/3) - \text{SQRT}(3)*(B^2+A^2)^{(1/6)} * \text{SIN}(\text{ATAN2}(B,A)/3))/2 - \%I*((B^2+A^2)^{(1/6)} * \text{SIN}(\text{ATAN2}(B,A)/3) + \text{SQRT}(3)*(B^2+A^2)^{(1/6)} * \text{COS}(\text{ATAN2}(B,A)/3))/2$$

$$X = (B^2+A^2)^{(1/6)} * \text{COS}(\text{ATAN2}(B,A)/3) + \%I*(B^2+A^2)^{(1/6)} * \text{SIN}(\text{ATAN2}(B,A)/3)$$

by using `solve()` and `rectform()` in Macsyma.

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