

## Re: vectors

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**From:** Northstar (xxx\_at\_yyy.zzz)

**Date:** 01/29/05

Date: Sat, 29 Jan 2005 20:29:53 -0000

In article <Vun7QR+WF28HN0X75BZ75MtMzEOy@4ax.com>, kurtzDELETE-THIS@asu.edu says...

>

>On Sat, 29 Jan 2005 17:10:10 -0000, xxx@yyy.zzz (Northstar) wrote:

>>I

>>Sorry. The question is:  $R = 9.953$ , magnitude of  $Z = 32.99$ , what is  $X$ ,

>>and how to state the equation for  $X$ ? TIA

>>

>>

>

>So I gather you are saying that  $Z = R + jX$  where  $R = 9.953$  so

> $Z = 9.953 + jX$ . Then if  $|Z| = 32.99$  that says:

>

> $32.99 = \sqrt{9.953^2 + X^2}$

>

>You can solve that for  $X$  if you begin by squaring both sides.

>

>--Lynn

Thanks. I had assumed

$$|Z| = \sqrt{R^2 + X^2}$$

$$|Z|^2 = R^2 + X^2$$

$$X^2 = |Z|^2 - R^2$$

$$X = \sqrt{|Z|^2 - R^2} = \sqrt{32.99^2 - 9.953^2} = 31.45$$

$$\text{then } \cos \text{ angle} = R / |Z| = 9.953 / 32.99 = 0.3017$$

$$\text{and phase angle of impedance} = \arccos 0.3017 = 72.44 \text{ degrees}$$

Does that look OK? TIA