

R[X, Y] polynomial ring

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 - *Date:* Tue, 24 May 2005 16:29:00 +0100
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I want to show that $R[x,y]$ is not a principal ideal domain,
So i'm trying to construct an ideal which is not principal

i do not fully understand what my text book means by:

$R[X,Y]$
 Let $I=(x,y)=\{XP(X,Y) + YQ(X,Y)\}$
 $=\{a_0 + a_1X + a_2X^2 + \dots : a_0=0\}$
 (i dont understand why $a_0=0$?)

then
 $X + Y + X^3 + XY^{14}$

If $I=R[X,Y]s(x,y)$
 X,Y elements of I
 $s(x,y)|x$ and $s(x,y)|y$

0 does not equal $s(x,y)=a_0$
 $s(x,y)$ element of I Contradiction
 therefore Not PID

If anyone can shed light on understanding this proof, or examples why $R[X,Y]$ is not a PID it will be greatly appreciated

Thanks once again

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 ◇ *From:* Arturo Magidin
 - ◆ **Re: R[X,Y] polynomial ring**
 ◇ *From:* Robin Chapman
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