

# What Did the Girl Rock Say to the Boy Rock? (Updated)

Convert the implicit Cartesian equation into a polar equation. Then play “matchmaker” and find your polar equation and its graph.



Notice the letters next each polar equation.

Write these letters in each box that contains the number of that problem. Once completed, you will answer the title question.

If you can't find a match, see if the polar equation has been written another way. Or recheck your work.

Hint:  $\sin 2\theta = 2 \cos \theta \sin \theta$  and  $\cos 2\theta = \cos^2 \theta - \sin^2 \theta$ .

1.  $(x^2 + y^2)^3 = 256y^4$
2.  $(x^2 + y^2)^3 = 64x^2y^2$
3.  $(x^2 + y^2)^5 = (32xy(x^2 - y^2))^2$
4.  $(x^2 + y^2)^2 = 64(x^2 - y^2)$
5.  $(x^2 + y^2)^3 = 64x^4$
6.  $(x^2 + y^2)^2 = 128xy$
7.  $(x^2 + y^2)^3 = (8(x^2 - y^2))^2$
8.  $(x^2 + y^2)^5 = 64((x^2 - y^2)^2 - 4x^2y^2)^2$

TL $r = 8\cos^2\theta$		IT $r = 16\sin^2\theta$	
BE $r = 8\sqrt{\cos 2\theta}$		AL $r = 8\sqrt{\sin 2\theta}$	
YO $r = 8\cos 3\theta$		BE $r = 8\sin 3\theta$	
EB $r = 8\cos 2\theta$		ER $r = 4\sin 2\theta$	
RO $r = 8\cos 5\theta$		LO $r = 8\sin 5\theta$	
LD $r = 8\cos 4\theta$		OU $r = 8\sin 4\theta$	
CK $r = 8\cos 6\theta$		VE $r = 8\sin 6\theta$	

4	4	6	6	1	1	5	5	7	7	3	3	8	8	2	2
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