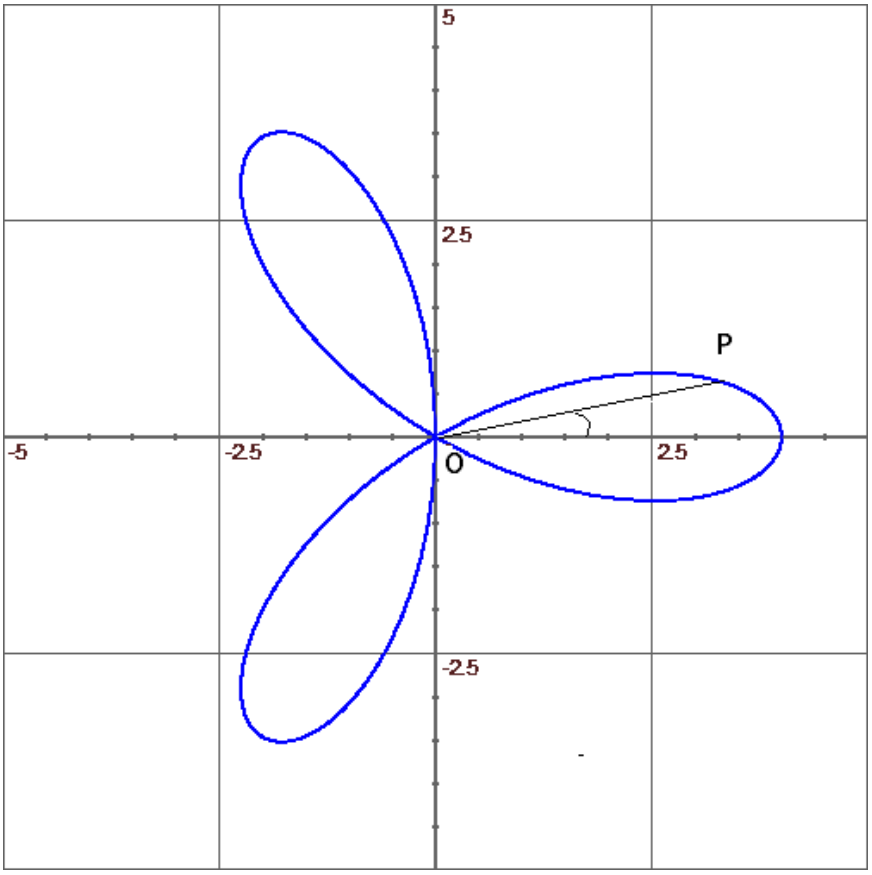
Answer on Question #45119 – Math - Calculus

Use your grapher to determine which of the graphs matches the polar equation

r = 4 cos 3θ.

Solution.



In polar coordinates we identify the origin *O* as the pole and the positive *x*-axis as the initial ray of angles measured in the usual trigonometric way. We can then identify each point *P* in the plane by polar coordinates *r*, θ, where *r* gives the directed distance from *O* to *P* and θ gives the directed angle from the initial ray to the ray $\overrightarrow{OP}$.

In our case when $= 0$, $r = 4cos0 = 4$,

then with increasing θ from 0 to $\frac{\pi}{6}$, r decreases to 0,

then with increasing θ from $\frac{\pi}{6}$ to $\frac{\pi}{3}$, r increases to 4 , and so on.