
1.

Prove with *Mathematica* that for a general curve $c(t) = (x(t), y(t))$, evolute (involute (c)) = c .

2.

Draw on the same picture the curves $\{t, t^2\}$ and $\left\{t - \frac{t}{\sqrt{4t^2+1}}, t^2 - \frac{t}{2\sqrt{4t^2+1}}\right\}$ and their evolutes.

What conclusion can be drawn from this picture?

Make an interactive graphic showing the circles of curvature of both of these curves at points on these curves given by varying the parameter t .

3.

Using the function *Nest* draw the first five evolutes of the ellipse $\{2 \cos(t), 3 \sin(t)\}$ for $0.01 \leq t \leq 2\pi$.

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5.

Zrób wykres i zbadaj krzywiznę krzywej $u^2 - 4v^2 - v^3 = 0$ dla $-4 \leq u \leq 4$, $-4 \leq v \leq 4$