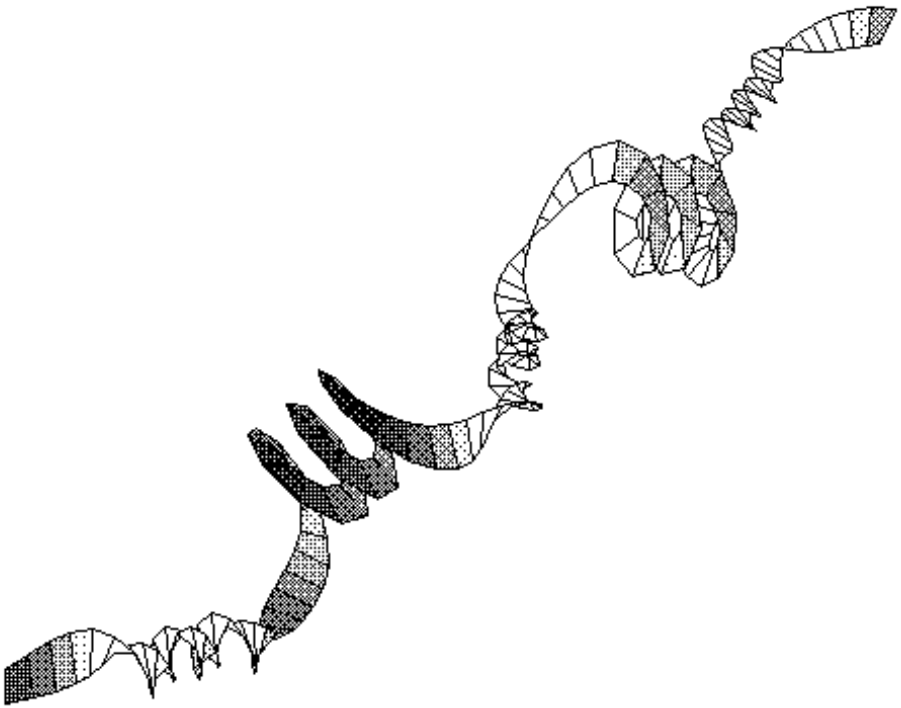
pollev.com/drsarah314

1. For the phone cord curve, which of the following are true?



a) $\kappa = 1$ is constant but $\tau = \sin(s)$ varies

b) $\tau = 1$ is constant but $\kappa = \sin(s)$ varies

c) They are both constant

d) They both vary

e) Rudy Rucker said there is no way to know

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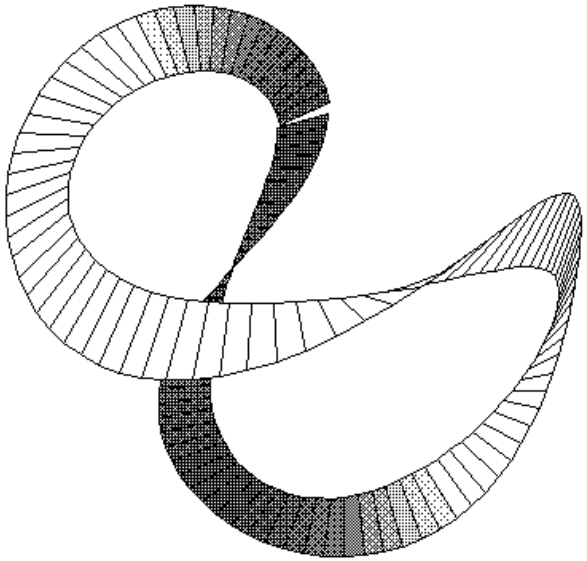
2. For the rocker curve, which of the following are true?

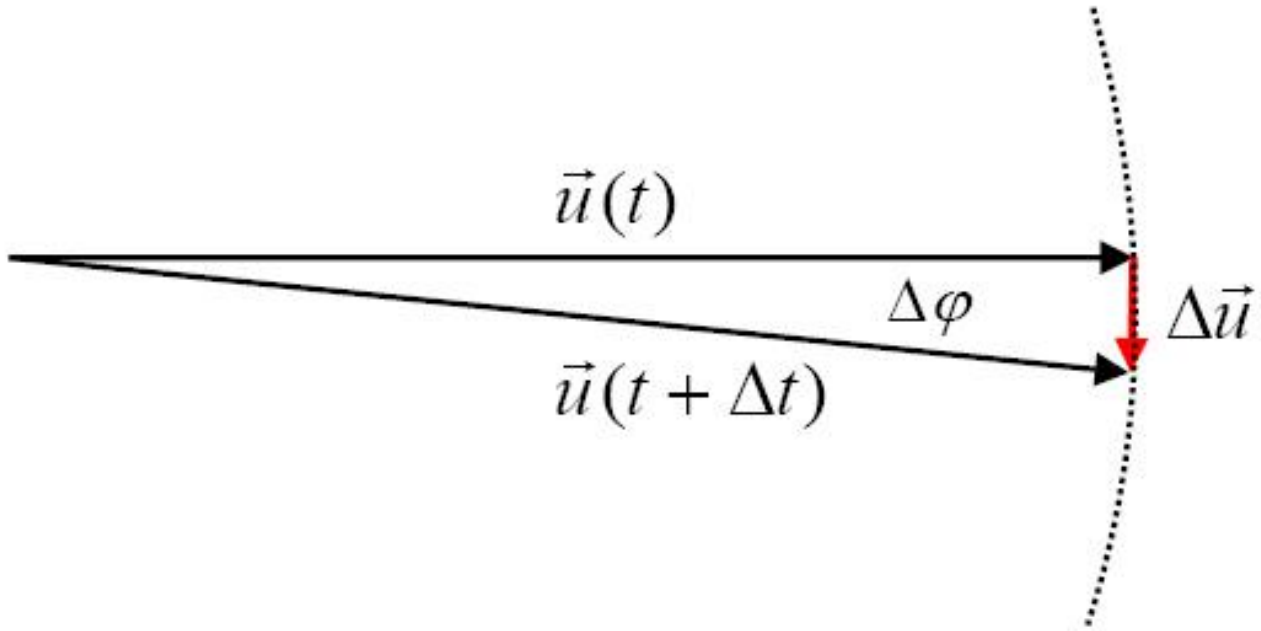


a) $\kappa = 1$ is constant but $\tau = \sin(s)$ varies
b) $\tau = 1$ is constant but $\kappa = \sin(s)$ varies
c) This is a baseball stitch curve
d) More than one of the above
e) None of the above

https://demonstrations.wolfram.com/Intrinsic3DCurves/

3. To prove that the derivative of a unit vector $\vec{u}$ is perpendicular to the original, we...

a) took the derivative of $\vec{u} \cdot \vec{u}$ and argued from there
b) took the derivative of $\vec{u} \times \vec{u}$ and argued from there
c) both of the above
d) none of the above



spherical epitrochoid

- circle rolling on another circle
- J. M. ain't a mathematician
  https://math.stackexchange.com/questions/15260/famous-space-curves-in-geometry-history
- https://drive.google.com/file/d/1ur_M4iyGetKYAdcfMvIYPdimU7LJa8sO/view?usp=sharing

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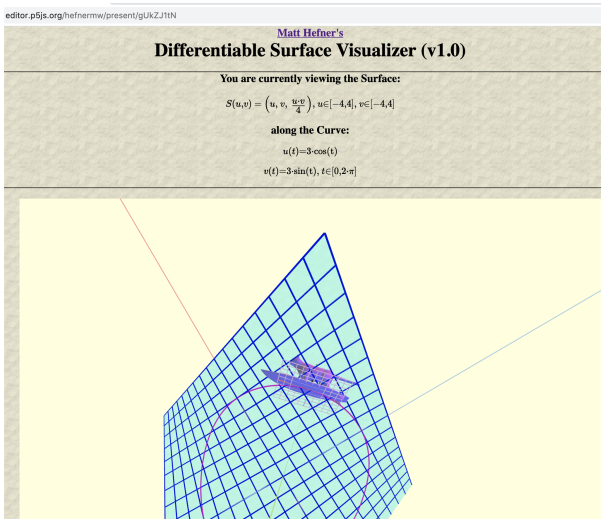
  kinematics of gear systems
- Johann Bernoulli (1742). "Opera Omnia, Lausanne and Generva, t. III." *Lect. Hospitalii* XXII: 454
  Franz Reuleaux (1876). *The Kinematics of Machinery*

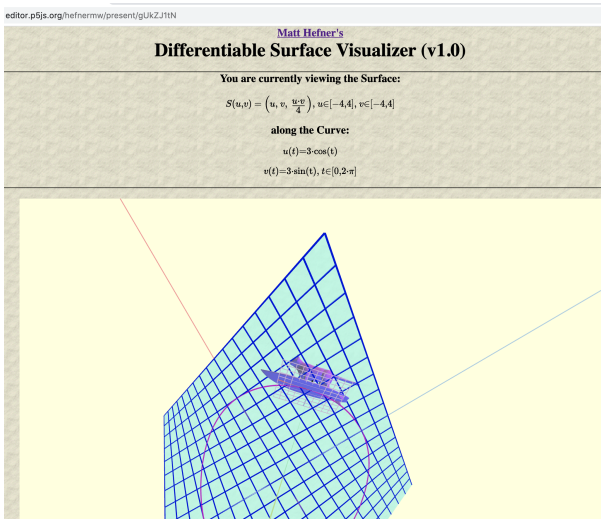
Frenet-Serret TNB Frame Review



Matt Hefner `http://matthefner.com/jsgeometryofcurves.html`

- How did we show $N \perp T$?
- Why is B perpendicular to both T and N? Hint: consider how we defined B.

Frenet-Serret TNB Frame Review



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- How did we show $N \perp T$?
- Why is B perpendicular to both T and N? Hint: consider how we defined B.
- Review: For the TNB derivatives, we defined $T'(s) = \kappa N$. Next, we showed B' had no B component and no T component and thus it makes sense to define $B' = -\tau N$. Then we explored the components of N'.