Problem statement A point is moving along the curve displayed in the direction indicated. Its motion is parameterized by arc length, $s$, so it is moving at unit speed. Arc length is measured from the point $P$ (both backward and forward). The curve is intended to continue indefinitely both forward and backward in $s$, with its forward motion curling more and more tightly around the indicated circle, $B$, and, backward, curling more and more tightly around the other circle, $A$. Near $P$ the curve is parallel to the line segment shown near $P$. Sketch a graph of the curvature, $\kappa$, as a function of the arc length, $s$. What are $\lim_{s \to +\infty} \kappa(s)$ and $\lim_{s \to -\infty} \kappa(s)$? Use complete English sentences to explain your graph and the numbers given.