Part I: Given the attached graph of a function $y=f(x)$.

1. Indicate the point that is the root of the equation. Label it $r$.
2. Start at the x -value labeled $\mathrm{x}_{0}$, and draw a vertical line to the graph. Mark the point on the $\operatorname{graph}\left(x_{0}, f\left(x_{0}\right)\right)$.
3. Draw the tangent line to the function at the point $\left(x_{0}, f\left(x_{0}\right)\right)$
4. Indicate the point where the tangent line intersects the $x$-axis. Label this point $x_{1}$
5. Repeat steps $2-4$, starting with $x_{1}$, and labeling the new point $x_{2}$. Continue this several times for $x_{3}, x_{4}$, etc.
6. What can you say about the points $x_{1}, x_{2}, x_{3}$, etc and their relationship to the root r .


Newton's Method Graphs

$$
f(x)=x^{3}+x^{2}+x-1
$$



