Examples 3.2 – Polynomial Functions

1. Find $f'(x)$ if $f(x) = -3x^7 + 4x^3 - 10x$.

   **Solution:**

2. Suppose the total amount of outstanding mortgage debt in the U.S. for years between 1980 and 2000 can be modeled by $A(t) = 0.173t^4 - 6.24t^3 + 71.06t^2$ billion dollars $t$ years after 1980. Find $A(16)$ and $A'(16)$, and interpret the answers.

   **Solution:**

3. Investigate the end behavior of the functions from Examples 1 and 2.

   **Solution:**

4. Find the $x$-intercepts, critical points, and end behavior of $f(x) = x^5 - 4x^3 - 21x$.

   **Solution:** $x$-intercepts:

   Critical Points:

   End Behavior: