Polynomial & Exponential Derivatives

While working in a group make sure you:

- Expect to make mistakes but be sure to reflect/learn from them!
- Are civil and are aware of your impact on others.
- Assume and engage with the strongest argument while assuming best intent.

1. Use the properties discussed in class to find the following:

\[ \frac{d}{dx} (x^4 - 6x^2 + 4) \]

\[ \left( \frac{3}{4} x^8 + x^\pi \right)' \]

\[ \left( \left( \frac{1}{2} \right)^5 \right)' \]

\[ \frac{d}{dx} \left( \frac{x^2 - 2\sqrt{x}}{x} \right) \]

2. For what values of \( x \) does the graph of \( f(x) = x^4 - 6x^2 + 4 \) have a horizontal tangent?
3. Consider \( \alpha(x) = x^4 + 2e^x \). Find the equation of the line tangent to the graph of \( \alpha \) at the point \((0, 2)\).

4. At what point on the curve of \( y = 1 + 2e^x - 3x \) is the tangent line parallel to the line \( 3x - y = 5 \)?