Differentiating

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. Find $\dfrac{d}{dx}f(x)$ using explicit differentiation

   $f(x) = 47 + 3 \cdot 2^{3x^2 - x}$

   $f(x) = \dfrac{x^2 + e}{\sqrt{x^3 - 5}}$

2. Assume that y is a function of x. Find $\frac{dy}{dx}$ in the following:

   (a) $x^3 + y^3 = 8$

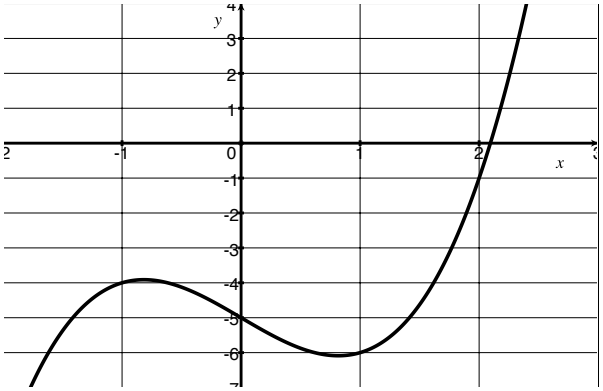
   (b) $y \ln(x) = x^2 + y^2$

Linear Approximations

3. Let $g(x) = x^3 - 2x - 5$.

   (a) Find the linearization of $g(x)$ when $x = 2$.

   (b) The graph of g is given to the right. Draw the linearization of g that you found above.



4. Use linear approximation to estimate a root of $x^3 - 2x - 5$.