1) Given $f(1) = 4$ and $f(2) = -3$ which of the following is true by the Intermediate Value Theorem?
   a) there exists a constant c such that $-4 < c < 3$ and $f(0) = c$.
   b) $f(x)$ has a root between $[1, 2]$.
   c) $f(2) \leq f(x) \leq f(1)$ for any $1 < x < 2$.
   d) for any value $-3 \leq y \leq 4$, there is some x-value $1 \leq x \leq 2$ so that $f(x) = y$.
   e) for any value $1 \leq x \leq 2$, there is some y-value $-3 \leq y \leq 4$ so that $f(x) = y$.

2) Explain in your own words and diagrams what the Intermediate Value Theorem entails.

3) Do the graphs of $y = x^3$ and $y = 1 + x - 2x^2$ intersect at a positive value of x?