# Work on these with your partner(s) at the board

Let $f(x) = x^4 - 2x^3 - 5x^2 + 12x - \pi$

1. Find the critical points of $f$
2. On which intervals is $f$ increasing? decreasing?
3. Find the inflection points of $f$
4. On which intervals is $f$ concave up? concave down?
5. Use the Second Derivative Test to classify the critical points as relative max or relative min
6. Use the First Derivative Test to classify the critical points as relative max or relative min
7. Verify your answers by graphing $y = f(x)$