4-STEP METHOD FOR ANALYZING THE BEHAVIOR OF A FUNCTION

STEP 1 - Use $f(x)$

A. Domain

B. Intercepts

C. Asymptotes

STEP 2 - Use $f'(x)$

A. Partition Numbers
   1. Equal to Zero
   2. Undefined

B. Sign Chart

C. Intervals where f is increasing and decreasing

D. First Derivative Test for Critical Value(s)/Local Extrema

STEP 3 - Use $f''(x)$

A. Partition Numbers
   1. Equal to Zero
   2. Undefined

B. Sign Chart

C. Concavity of f

D. Inflection

E. Second Derivative Test for Critical Value(s)/Local Extrema

STEP 4 - Back to $f(x)$

A. Start graph with Step 1 information

B. Sketch in Step 2 information

C. Sketch in Step 3 information

D. Use graphing utility to check accuracy