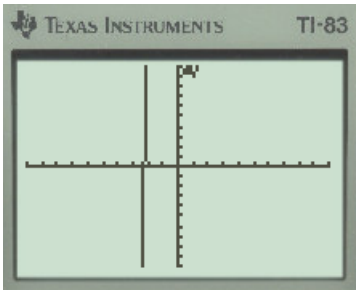
PRECALC AB PERIOD: _____ NAME:_____

Worksheet 25 - Calculator Skills

Instructions for TI-84

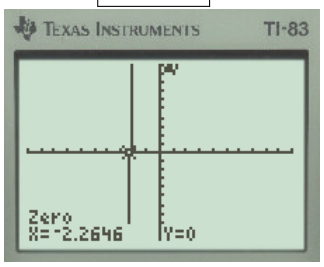
Let $f(x) = x^5 + 3x^2 - 12x + 17$ and $g(x) = e^{3x} - 15x + 12$

1. Graph $f(x)$ and $g(x)$ on the same window:
   [Y=] $\backslash Y_1 = f(x)$ and $\backslash Y_2 = g(x)$ [GRAPH]



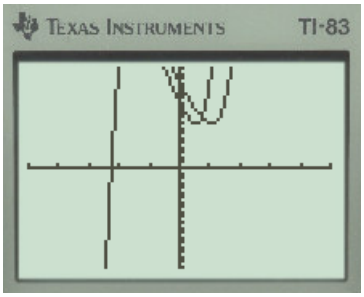
2. Find the zeros of $f(x)$:

   [2ND] [TRACE] highlight, 2: zero, [ENTER]
   Left Bound? use [←] until left of zero, [ENTER]
   Right Bound? use [→] until right of zero, [ENTER]
   Guess? [ENTER]

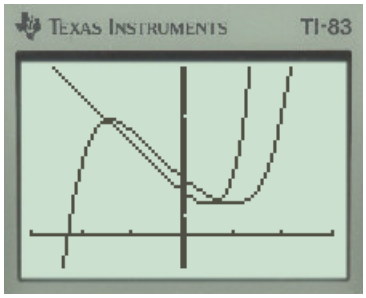


3. Change the window to $[-5, 5] \times [-20, 20]$ and then $[-3, 3] \times [-10, 50]$

   [WINDOW] $Xmin = -5$, $Xmax = 5$,
   $Ymin = -20$, $Ymax = 20$ [GRAPH]

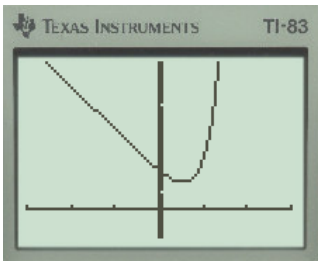


   [WINDOW] $Xmin = -3$, $Xmax = 3$,
   $Ymin = -10$, $Ymax = 50$ [GRAPH]



- To change window to $[-10, 10] \times [-10, 10]$: [ZOOM] 6: ZStandard
- To trace the first function $Y_1 = f(x)$: [TRACE] use [←] and [→] to trace
- To trace the second function $Y_2 = g(x)$: [TRACE] [↑] use [←] and [→] to trace

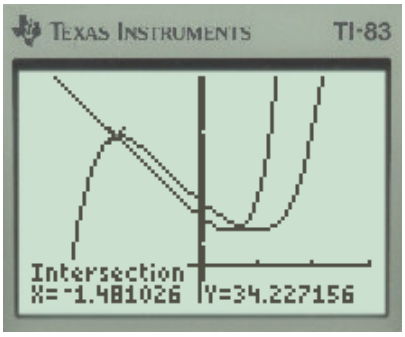
4. Turn off $f(x)$, graph $g(x)$ in $[-3, 3] \times [-10, 50]$
   [Y=] $\backslash Y_1$ [=] $f(x)$ unhighlight = [GRAPH]



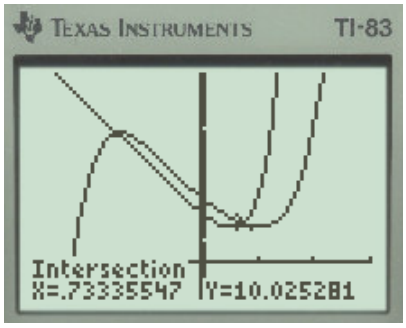
5. Evaluate $f(2)$, $f(12.8)$, $g(7)$, $g(2.6)$
   ⋆ [2ND] [TRACE] highlight 1: Value, [ENTER]
   $f(2)$: [2] [ENTER] $Y_1 = 37$
   $f(12.8)$: Change window to include $X = 12.8$,
   $[-3, 13] \times [-10, 50]$ repeat step ⋆
   [12.8] [ENTER] $Y_1 = 343952.3$
   $g(7)$: [7] [ENTER] [↑] $Y_2 = 1.31882E9$
   $g(2.6)$: [2.6] [ENTER] $Y_2 = 2413.602$

6. Find the point(s) of intersection of $f(x)$ and $g(x)$:

2ND | TRACE | 5: intersect | ENTER
First Curve? Trace near intersection point | ENTER
Second Curve? | ENTER | Guess? | ENTER

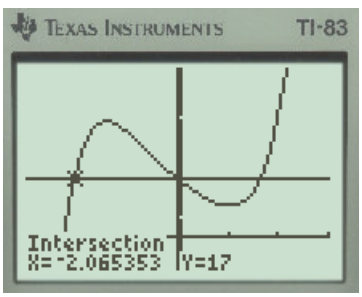


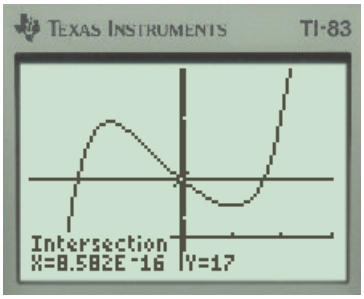
2ND | TRACE | 5: intersect | ENTER
First Curve? Trace near intersection point | ENTER
Second Curve? | ENTER | Guess? | ENTER

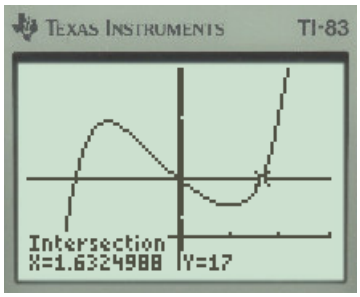


7. Find the value of x that makes $f(x) = 17$

Y= | $\backslash Y_2 = 17$ | GRAPH
2ND | TRACE | 5: intersect | ENTER
First Curve? Trace near intersection point | ENTER
Second Curve? | ENTER | Guess? | ENTER

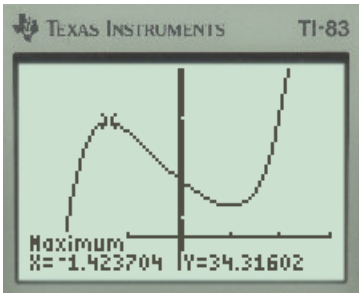




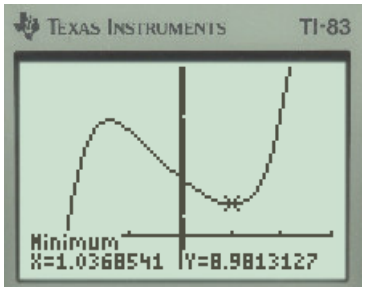


8. Find the local maximum and minimum of $f(x)$:

2ND | TRACE | 4: maximum | ENTER
Left Bound? use | $\leftarrow$ | until left of max, | ENTER
Right Bound? use | $\rightarrow$ | until right of max, | ENTER
Guess? | ENTER



2ND | TRACE | 3: minimum | ENTER
Left Bound? use | $\leftarrow$ | until left of min, | ENTER
Right Bound? use | $\rightarrow$ | until right of min, | ENTER
Guess? | ENTER



Homework Assignment: Start with your calculator in ZStandard mode.

1. Graph $f(x) = 3x^3 - 5x^2 - 9x + 2$ in your calculator. Change the window to show all local maxima and minima as well as zeros. Sketch the graph below.

2. List all local maxima and minima as coordinates, rounding to the nearest thousandth.

3. List all zeros as coordinates, rounding to the nearest thousandth.

4. Find the y-intercept using your calculator.

5. Graph $g(x) = -3x$ with $f(x)$ and find all three intersection points, rounding to the nearest thousandth.

6. Sketch the two graphs together below and label all zeros, intersection points, maxima, minima, and the y-intercept. Be as neat as possible and feel free to use other colors.

Comments/Questions: If you're struggling with your calculator, please feel free to write some questions below. I'll either answer them here, or I'll make sure we look over them in student hours. Your calculator is your best friend, so make sure you know how to use it to its full potential!