

## 6-2 Graphing Calculator Activity

### Solving Exponential Equations and Inequalities

Exponential equations and inequalities can be solved on a graphing calculator or on a TI-Nspire.

**Example:** Solve  $5^{(2x+5)} = 125^{(x+2.5)} - 2$ .

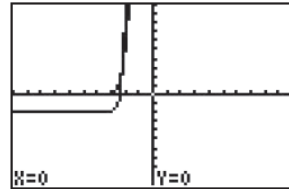
**Step 1:** Enter  $5^{(2x+5)}$  as **Y1** and  $125^{(x+2.5)} - 2$  as **Y2**.

Keystrokes:  $Y=$  5  $\wedge$  ( 2  $\times$ ,T,0, $\eta$  + 5 ) ENTER

125  $\wedge$  (  $\times$ ,T,0, $\eta$  + 2 , 5 ) - 2 ENTER

Then graph the two equations.

Keystrokes: GRAPH



**Step 2:** Use the Intersect function on the CALC menu to estimate the solution.

Keystrokes: 2nd [CALC] 5 ENTER ENTER ENTER

The intersection is at approximately  $(-2.17, 2.88)$ .

Check your solution: Substituting  $-2.17$  for  $x$ ,  $5^{(0.66)} \approx 125^{(0.33)} - 2$ .

### Exercises

Solve each exponential equation or inequality with a graphing calculator.

1.  $3^{4x+7} = 27^{4x-3}$

2.  $16^{2x+5} > 64^{3x-2}$

3.  $343^{2x-9} = 49^{x+6}$

4.  $128^{x-5} < 16^{2x-5}$

5.  $625^{3x-1} = 25^{3x+4}$

6.  $3^{x+1} = 6^{x-2}$