9.1 Graph Polynomial Functions

TEKS a.5, A.4.A, A.4.B

QUESTION How can you use a graph to check your work with polynomials?

EXAMPLE Check a sum or difference of polynomials

Tell whether the sum or difference is correct.

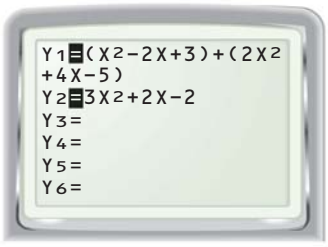
a. $(x^2 - 2x + 3) + (2x^2 + 4x - 5) \stackrel{?}{=} 3x^2 + 2x - 2$

b. $(x^3 + x + 1) - (5x^3 - 2x + 7) \stackrel{?}{=} -4x^3 - x - 6$

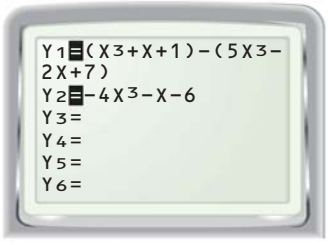
STEP 1 *Enter expressions*

Let y_1 equal the original expression.
Let y_2 equal the sum.

a.



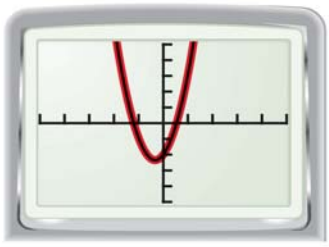
b.



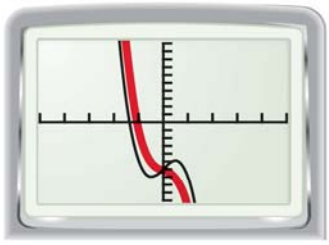
STEP 2 *Graph expressions*

For y_1, choose a normal graph style.
For y_2, choose a thicker graph style.

a.



b.



STEP 3 *Analyze graphs*

a. The thick curve coincides with the thin curve, so the sum is correct.

b. The thick curve deviates from the thin curve, so the difference is incorrect.

PRACTICE

Find the sum or difference. Use a graphing calculator to check your answer.

1. $(6x^2 + 4x - 1) + (x^2 - 2x + 2)$ **2.** $(3x^2 - 2x + 1) - (4x^2 - 5x + 1)$

Tell whether the sum or difference is correct. Correct any incorrect answers.

3. $(3x^2 - 2x + 4) + (-x^2 + 3x + 2) \stackrel{?}{=} 2x^2 + x + 6$

4. $(-4x^2 - 5x - 1) - (-5x^2 + 6x + 3) \stackrel{?}{=} -9x^2 + x + 2$