

Graph Polynomial Functions



Use appropriate tools strategically.

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

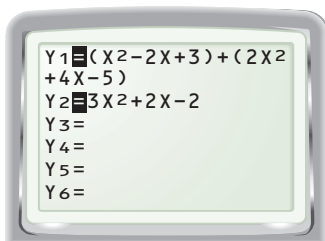
STEP 1 Enter expressions

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

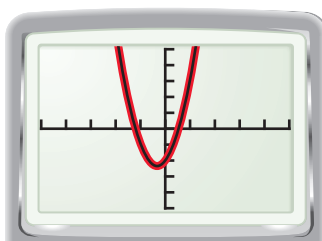
STEP 2 Graph expressions

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

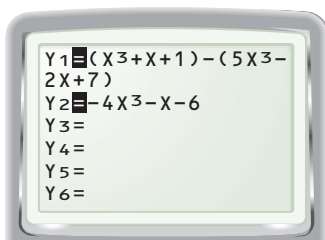
a.



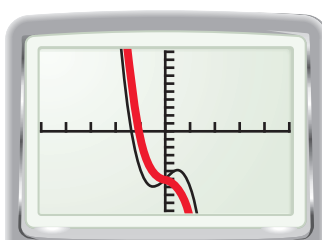
a.



b.



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