

ACTIVITY 6.7
Using Technology

Graphing Calculator Activity for use with Lesson 6.7

Solving Polynomial Equations

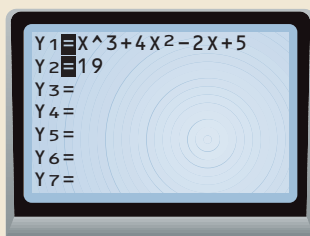
In Lesson 6.4 you learned to solve polynomial equations by factoring. When factoring is not possible, you can use a graphing calculator instead.

EXAMPLE

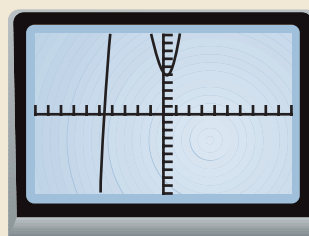
Use a graphing calculator to find the real solutions of $x^3 + 4x^2 - 2x + 5 = 19$.

SOLUTION

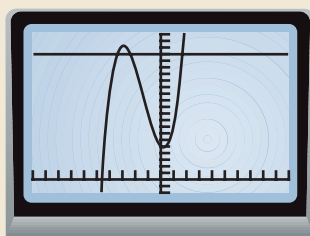
- 1 To solve the equation graphically, graph each side of the equation as follows.



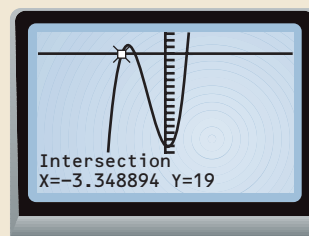
- 2 When the equations are graphed in the standard viewing window, you see most of the graph of y_1 , but none of the graph of y_2 .



- 3 You know that $y_2 = 19$ is a horizontal line. Change the viewing window so that $-10 \leq x \leq 10$ and $-2 \leq y \leq 22$.



- 4 The graphs of y_1 and y_2 intersect at three points. Use the *Intersect* feature to find the x-coordinates of these points.



The solutions are $x \approx -3.35$, $x \approx -2.40$, and $x \approx 1.74$.

EXERCISES

Use a graphing calculator to find the real solutions of the equation.

- $\frac{1}{2}x^3 - 3x^2 + x + 6 = 4$
- $2x^3 - 8x^2 + 5x + 14 = 7$
- $x^3 - 5x^2 + x + 3 = 8$
- $0.3x^3 - 5x^2 + 8x + 15 = 13$
- $x^4 - 6x^2 + 5 = 2$
- $0.2x^4 - 3x^3 - 12x^2 + 8x + 22 = 13$
- $17x^5 - 24x^3 + x^2 + 2x = 4$
- $-1.25x^5 + 3.75x^2 + 0.4x - 6 = -4$
- Look back at Example 5 on page 368. Use the method described above to solve the problem. Does your answer agree with the answer given in Example 5?

STUDENT HELP
INTERNET KEYSTROKE HELP
See keystrokes for several models of calculators at www.mcdougallittell.com