

**Concept Quiz**

**Class** \_\_\_\_\_ **Name** \_\_\_\_\_

1. Find 3 different polynomial functions that have 2 as a zero. \_\_\_\_\_

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2. Find 3 different polynomial functions that have 2 as the only zero. \_\_\_\_\_

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3. Find 3 different polynomial functions that have zeros of  $-4$  and  $4$ . \_\_\_\_\_

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4. Find 3 different polynomial functions that have zeros of  $-3$ ,  $1$ , and  $4$ . \_\_\_\_\_

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## Teacher Notes:

In “Concept Quizzes,” we often test for conceptual understanding by using the technique of working backwards. That is, give the student the answer, and have them find the question. In this case, the activity is just one of six to eight activities designed to teach students to factor – spread out over time and without direct teacher action, requiring a graphing calculator. This activity is to be assigned after students can find zeros (with a graphing calculator) and know what they are. But it is assigned before factoring is taught. You will also note that the activity requires students to understand the parameter-behavior connections, and this is taught in Chapters Two and Three. Factoring is “officially” taught in Chapter Four.

Obviously, each item in the quiz has an infinite number of correct answers. So the answer key offers “sample” correct answers. This brings up another extremely important idea presented in *Foundations 3e*, we try to foster student creativity through the use of many open-ended exercises. When you look at life from a global perspective and we think about what each country has to offer the world, what does America offer? We are a part of the global economy, and what we are finding is that historically, Americans bring creativity to the world. It is what we are good at. So *Foundations* makes it a priority.

In *Foundations 3e*, the behavior of zeros is developed in Chapters Two and Three, and then in Chapter Four the connection between zeros and factors of polynomials is exploited, with the net gain of students learning to factor (with the graphing calculator) trinomials and the difference of squares. Factoring through the use of the zero-factor connection (and a graphing calculator) is followed by factoring with pencil and paper.

The concept quizzes are an integral part of the overall teaching/assessing tools used with *Foundations for College Mathematics 3e*. You may want to consider making them as much as 10 to 15% of a student’s grade. Tools like the concept quizzes measure a totally different kind of learning than do skill-based midterms and the explorations that require “exploration” and a little tenacity. Concept quizzes require students anywhere from 5 to 20 minutes to finish – depending on the student and on the quiz. Please note that many of the quizzes are available as Texas Instruments StudyCard lessons for the TI-83/84, and as apps for the iPad, Kindle, Nook, iPhone, and Android phones.