Undergraduate Research Problems
Research experiences in linear algebra and number theory for undergraduate faculty
American Institute of Mathematics, Palo Alto, California
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Characteristics of good undergraduate research problems

Always:

1. The problem is appropriate for the student's background and interest.
2. The student can be actively involved in working on the problem.
3. The work on the problem provides a discovery experience.
4. The problem is open-ended.

Often:

5. The problem can be approached experimentally and/or computationally.
6. You know a first step that the student can take to investigate the problem.
7. The student will be able to generate more questions to investigate as the work progresses.

Sources of undergraduate research problems

1. Your mathematical interests.
2. Published articles (expository or research).
3. Websites that offer problems.
4. Conference sessions on undergraduate research.
5. Ask friends.
6. Questions from students.
7. Mistakes.
8. Take a known result and modify it so it is unknown (variation on a theme).
9. The problem finds you.
10. Other (not on this list).