1. Suppose you have a graph with 12 odd vertices, and you need to Eulerize it. What is the smallest possible number of extra edges needed?

2. Are there graphs with 12 odd vertices that need more extra edges than your answer in Problem 1?

3. Are there graphs with 12 odd vertices that use exactly the number of extra edges you said in Problem 1?

For Problems 4-10, use this graph.

4. How many odd vertices are there?

5. Is the following a correct minimal Eulerization?

6. If the Eulerization in Problem 5 is wrong, what’s wrong with it? (You’ll be given choices: Nothing wrong, New edge doesn’t double an existing edge, Too many extra edges, or Some vertices are still odd.)

7. Is this one correct?
8. If the Eulerization in Problem 7 is wrong, what’s wrong with it? (You’ll be given choices: Nothing wrong, New edge doesn’t double an existing edge, Too many extra edges, or Some vertices are still odd.)

9. Is this one correct?

For Problems 11-17, use this graph.

10. If the Eulerization in Problem 9 is wrong, what’s wrong with it? (You’ll be given choices: Nothing wrong, New edge doesn’t double an existing edge, Too many extra edges, or Some vertices are still odd.)

11. How many odd vertices are there?

12. Is the following a correct minimal Eulerization?

13. If the Eulerization in Problem 12 is wrong, what’s wrong with it?
14. Is this one correct?

15. If the Eulerization in Problem 14 is wrong, what’s wrong with it?

16. Is this one correct?

17. If the Eulerization in Problem 16 is wrong, what’s wrong with it?

For Problem 18-19, use this graph.

18. How many odd vertices are there?

19. Does this graph need to be Eulerized?