**Практическое задание № 2.3**

Фирма планирует выпуск новой модели изделия.

Спрос на модель не может быть точно определен. Однако, можно предположить, что он характеризуется 4-мя возможными состояниями:

* С1 – низкий;
* С2 – средний;
* С3 – высокий;
* С4 - очень высокий.

С учетом этих состояний спроса анализируются 2 возможные модификации данной модели: М1 и М2. Производство каждой из модификаций обеспечивает в конечном итоге различную прибыль.

Требуется определить относительные объемы выпуска модификаций М1 и М2 (в %), обеспечивающие гарантированную среднюю величину прибыли при любом состоянии спроса.

Формализовать исходную задачу в виде матричной игры.

Решить задачу геометрическим методом.

Разработать ПО(на осн следств 2 программу. Для кажд p строить min min огибающая и находить…неинтересно)(построить имитационную модель) на языке Python.

Построить имитационное моделирование (метод Монте-Карло)

**Варианты задачи 3.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| 1. | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | С1 | С2 | С3 | С4 | | М1 | 5 | 4 | 2 | 1 | | М2 | 2 | 3 | 4 | 8 | |  |  |  |  |  | | 9. | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | С1 | С2 | С3 | С4 | | М1 | 7 | 5 | 4 | 2 | | М2 | 1 | 2 | 5 | 6 | |  |  |  |  |  | |
| 2. | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | С1 | С2 | С3 | С4 | | М1 | 6 | 6 | 3 | 3 | | М2 | 1 | 2 | 5 | 5 | |  |  |  |  |  | | 10. | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | С1 | С2 | С3 | С4 | | М1 | 5 | 4 | 4 | 7 | | М2 | 1 | 3 | 3 | 7 | |  |  |  |  |  | |
| 3. | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | С1 | С2 | С3 | С4 | | М1 | 1 | 2 | 3 | 4 | | М2 | 7 | 5 | 3 | 1 | |  |  |  |  |  | | 11. | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | С1 | С2 | С3 | С4 | | М1 | 2 | 4 | 4 | 7 | | М2 | 8 | 2 | 1 | 1 | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 4. | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | С1 | С2 | С3 | С4 | | М1 | 1 | 2 | 4 | 6 | | М2 | 8 | 7 | 3 | 2 | |  |  |  |  |  | | 12. | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | С1 | С2 | С3 | С4 | | М1 | 6 | 4 | 2 | 1 | | М2 | 2 | 4 | 4 | 7 | |
| 5. | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | С1 | С2 | С3 | С4 | | М1 | 5 | 4 | 3 | 1 | | М2 | 2 | 3 | 4 | 6 | |  |  |  |  |  | | 13. | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | С1 | С2 | С3 | С4 | | М1 | 4 | 3 | 2 | 2 | | М2 | 1 | 4 | 5 | 8 | |
| 6. | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | С1 | С2 | С3 | С4 | | М1 | 5 | 4 | 2 | 2 | | М2 | 1 | 1 | 5 | 7 | |  |  |  |  |  | | 14. | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | С1 | С2 | С3 | С4 | | М1 | 7 | 6 | 3 | 4 | | М2 | 1 | 2 | 8 | 7 | |
| 7. | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | С1 | С2 | С3 | С4 | | М1 | 5 | 4 | 3 | 2 | | М2 | 1 | 4 | 4 | 7 | |  |  |  |  |  | | 15. | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | С1 | С2 | С3 | С4 | | М1 | 7 | 5 | 4 | 2 | | М2 | 2 | 3 | 3 | 5 | |
| 8. | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | С1 | С2 | С3 | С4 | | М1 | 8 | 7 | 2 | 1 | | М2 | 1 | 2 | 5 | 5 | | 16. | |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | С1 | С2 | С3 | С4 | | М1 | 7 | 5 | 4 | 2 | | М2 | 1 | 3 | 3 | 4 | |