## Задания по блоку Приближение функций

**Задание 9.** Для таблично заданной функции построить интерполяционные многочлены Лагранжа второй и третьей степени. Проверить многочлен в любой узловой точке. Вычислить значение функции в точке , учитывая положение заданной точки на интервале (таблица заданий 6).

**Задание 10.** Для таблично заданной функции построить интерполяционные многочлены Ньютона второй и третьей степени. Проверить многочлен в любой узловой точке. Вычислить значение функции в точке , учитывая положение заданной точки на интервале. Выполнить оценку погрешности каждого многочлена (Таблица заданий 6).

**Таблица заданий 6**

|  |  |  |  |  |  |  |  |  |  |
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| Вариант 1 | |  | |  |  |  |  | |  |
|  |  | 1 |  |  |  |  |  |  |  |
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| Вариант 2 | |  | |  |  |  |  | |  |
|  |  | 1 |  |  |  |  |  |  |  |
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| Вариант 3 | |  | |  |  |  |  | |  |
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| Вариант 4 | |  | |  |  |  |  | |  |
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| Вариант 5 | |  | |  |  |  |  | |  |
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| Вариант 6 | |  | |  |  |  |  | |  |
|  |  | 1 |  |  |  |  |  |  |  |
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| Вариант 7 | |  | |  |  |  |  | |  |
|  |  | 1 |  |  |  |  |  |  |  |
|  | - |  |  |  |  |  |  |  |  |
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| Вариант 8 | |  | |  |  |  |  | |  |
|  |  | 1 |  |  |  |  |  |  |  |
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| Вариант 9 | |  | |  |  |  |  | |  |
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| Вариант 10 | |  | |  |  |  |  | |  |
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| Вариант 11 | |  | |  |  |  |  | |  |
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| Вариант 12 | |  | |  |  |  |  | |  |
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| Вариант 13 | |  | |  |  |  |  | |  |
|  |  | 1 |  |  |  |  |  |  |  |
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| Вариант 14 | |  | |  |  |  |  | |  |
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| Вариант 15 | |  | |  |  |  |  | |  |
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| Вариант 16 | |  | |  |  |  |  | |  |
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| Вариант 17 | |  | |  |  |  |  | |  |
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| Вариант 18 | |  | |  |  |  |  | |  |
|  |  | 1 |  |  |  |  |  |  |  |
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| Вариант 19 | |  | |  |  |  |  | |  |
|  |  | 1 |  |  |  |  |  |  |  |
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| Вариант 20 | |  | |  |  |  |  | |  |
|  |  | 1 |  |  |  |  |  |  |  |
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| Вариант 21 | |  | |  |  |  |  | |  |
|  |  | 1 |  |  |  |  |  |  |  |
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| Вариант 22 | |  | |  |  |  |  | |  |
|  | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
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| Вариант 23 | |  | |  |  |  |  | |  |
|  |  | 1 |  |  |  |  |  |  |  |
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| Вариант 24 | |  | |  |  |  |  | |  |
|  |  | 1 |  |  |  |  |  |  |  |
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**Задание 11**. Для таблично заданной функции с неравномерной сеткой построить естественный кубический сплайн дефекта 1. Вычислить значение сеточной функции в заданной точке Указать коэффициенты сплайна на отрезке, включающим точку (таблица заданий 7).

**Таблица заданий 7**

|  |  |  |  |  |  |  |  |  |  |  |  |
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|  | Вариант 1 | |  |  |  |  |  |  | | |  |
|  |  | 1 |  |  |  |  |  |  |  |  |  |
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|  | Вариант 2 | |  |  |  |  |  |  | | |  |
|  |  | 1 |  |  |  |  |  |  |  |  |  |
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|  | Вариант 3 | |  |  |  |  |  |  | | |  |
|  |  | 1 |  |  |  |  |  |  |  |  |  |
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|  | Вариант 4 | |  |  |  |  |  |  | | |  |
|  |  | 1 |  |  |  |  |  |  |  |  |  |
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|  | Вариант 5 | |  |  |  |  |  |  | | |  |
|  |  | 1 |  |  |  |  |  |  |  |  |  |
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|  | Вариант 6 | |  |  |  |  |  |  | | |  |
|  |  | 1 |  |  |  |  |  |  |  |  |  |
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|  | Вариант 7 | |  |  |  |  |  |  | | |  |
|  |  | 1 |  |  |  |  |  |  |  |  |  |
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|  | Вариант 8 | |  |  |  |  |  |  | | |  |
|  |  | 1 |  |  |  |  |  |  |  |  |  |
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|  | Вариант 9 | |  |  |  |  |  |  | | |  |
|  |  | 1 |  |  |  |  |  |  |  |  |  |
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|  | Вариант 10 | |  |  |  |  |  |  | | |  |
|  |  | 1 |  |  |  |  |  |  |  |  |  |
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|  | Вариант 11 | |  |  |  |  |  |  | | |  |
|  |  | 1 |  |  |  |  |  |  |  |  |  |
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|  | Вариант 12 | |  |  |  |  |  |  | | |  |
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|  | Вариант 13 | |  |  |  |  |  |  | | |  |
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|  | Вариант 14 | |  |  |  |  |  |  | | |  |
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|  | Вариант 15 | |  |  |  |  |  |  | | |  |
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|  | Вариант 16 | |  |  |  |  |  |  | | |  |
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|  | Вариант 17 | |  |  |  |  |  |  | | |  |
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|  | Вариант 18 | |  |  |  |  |  |  | | |  |
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|  | Вариант 19 | |  |  |  |  |  |  | | |  |
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|  | Вариант 20 | |  |  |  |  |  |  | | |  |
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|  | Вариант 21 | |  |  |  |  |  |  | | |  |
|  |  | 1 |  |  |  |  |  |  |  |  |  |
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|  | Вариант 22 | |  |  |  |  |  |  | | |  |
|  |  | 1 |  |  |  |  |  |  |  |  |  |
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|  | Вариант 23 | |  |  |  |  |  |  | | |  |
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|  | Вариант 24 | |  |  |  |  |  |  | | |  |
|  |  | 1 |  |  |  |  |  |  |  |  |  |
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**Задание 12**. Для таблично заданной функции путем решения нормальной системы МНК найти приближающие многочлены первой, второй и третьей степени. Для каждого из приближающих многочленов вычислить сумму квадратов ошибок. Построить общий график всех многочленов и приближаемой функции. Вычислить значения всех приближающих многочленов в точке (таблица заданий 8).

**Таблица заданий 8**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Вариант 1 | |  |  |  |  |  | | |  |  |
|  |  | 1 |  |  |  |  |  |  |  |  | 10 |
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|  | Вариант 2 | |  |  |  |  |  | | |  |
|  |  | 1 |  |  |  |  |  |  |  |  |
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|  | Вариант 3 | |  |  |  |  |  | | |  |  |
|  |  | 1 |  |  |  |  |  |  |  |  | 10 |
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|  | Вариант 4 | |  |  |  |  |  | | |  |
|  |  | 1 |  |  |  |  |  |  |  |  |
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|  | Вариант 5 | |  |  |  |  |  | | |  |  |
|  |  | 1 |  |  |  |  |  |  |  |  | 10 |
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|  | Вариант 6 | |  |  |  |  |  | | |  |
|  |  | 1 |  |  |  |  |  |  |  |  |
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|  | Вариант 7 | |  |  |  |  |  | | |  |  |
|  |  | 1 |  |  |  |  |  |  |  |  | 10 |
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|  | Вариант 8 | |  |  |  |  |  | | |  |
|  |  | 1 |  |  |  |  |  |  |  |  |
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|  | Вариант 9 | |  |  |  |  |  | | |  |  |
|  |  | 1 |  |  |  |  |  |  |  |  | 10 |
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|  | Вариант 10 | |  |  |  |  |  | | |  |
|  |  | 1 |  |  |  |  |  |  |  |  |
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|  | Вариант 11 | |  |  |  |  |  | | |  |  |
|  |  | 1 |  |  |  |  |  |  |  |  | 10 |
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|  | Вариант 12 | |  |  |  |  |  | | |  |
|  |  | 1 |  |  |  |  |  |  |  |  |
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|  | Вариант 13 | |  |  |  |  |  | | |  |  |
|  |  | 1 |  |  |  |  |  |  |  |  | 10 |
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|  | Вариант 14 | |  |  |  |  |  | | |  |
|  |  | 1 |  |  |  |  |  |  |  |  |
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|  | Вариант 15 | |  |  |  |  |  | | |  |  |
|  |  | 1 |  |  |  |  |  |  |  |  | 10 |
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|  | Вариант 16 | |  |  |  |  |  | | |  |
|  |  | 1 |  |  |  |  |  |  |  |  |
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|  | Вариант 17 | |  |  |  |  |  | | |  |  |
|  |  | 1 |  |  |  |  |  |  |  |  | 10 |
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|  | Вариант 18 | |  |  |  |  |  | | |  |
|  |  | 1 |  |  |  |  |  |  |  |  |
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|  | Вариант 19 | |  |  |  |  |  | | |  |  |
|  |  | 1 |  |  |  |  |  |  |  |  | 10 |
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|  | Вариант 20 | |  |  |  |  |  | | |  |
|  |  | 1 |  |  |  |  |  |  |  |  |
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|  | Вариант 21 | |  |  |  |  |  | | |  |  |
|  |  | 1 |  |  |  |  |  |  |  |  | 10 |
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|  | Вариант 22 | |  |  |  |  |  | | |  |
|  |  | 1 |  |  |  |  |  |  |  |  |
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|  | Вариант 23 | |  |  |  |  |  | | |  |  |
|  |  | 1 |  |  |  |  |  |  |  |  | 10 |
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|  | Вариант 24 | |  |  |  |  |  | | |  |
|  |  | 1 |  |  |  |  |  |  |  |  |
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