**Estudio de R2**

#### **Explicación del Código**

El código de R2 implementa un algoritmo de selección de características utilizando un enfoque de eliminación hacia atrás (backward elimination) que minimiza el error de predicción. Este método es opuesto al enfoque de selección hacia adelante (forward selection) de R1.

**Normalización de los Datos**

Al igual que en R1, se centran las variables **X** e **Y** restando sus medias respectivas. Esto es crucial para evitar sesgos en el modelo debido a la escala de las características.

#### **Selección de Características**

El algoritmo inicialmente considera todas las características disponibles. En cada iteración, intenta eliminar una característica y evalúa el modelo con las características restantes. La característica cuya eliminación resulta en el cambio mínimo del error de predicción es considerada la menos importante y se elimina del conjunto de características.

#### **Modelo Polinomial**

Se utiliza un modelo polinomial de orden variable de 2,3,5 y 10 para ajustar los datos y realizar predicciones. Este modelo es similar al utilizado en el primer código, pero aquí se aplica a un conjunto de características que se va reduciendo en cada iteración.

#### **Cálculo del Error**

El error de predicción se calcula utilizando la media de las diferencias absolutas entre las predicciones del modelo y los valores reales de **Y**, elevadas a la potencia de **alpha**.

#### **Comparación con el Primer Código**

* **Enfoque de Selección**: Mientras que el primer código añadía características de forma iterativa (selección hacia adelante), este código las elimina (selección hacia atrás).
* **Orden del Polinomio**: Ambos códigos utilizan un modelo polinomial, pero el enfoque de cómo se selecciona el orden del polinomio puede variar.

#### **En resumen:**

Este segundo código proporciona una estrategia alternativa para la selección de características, que puede ser útil en situaciones donde puede que algunas características pueden ser redundantes o poco informativas.

**CUANDO ALPHA=1**

**Orden poli 2** **Orden poli 3** Interfaz de usuario gráfica, Aplicación

Descripción generada automáticamente Interfaz de usuario gráfica, Gráfico, Histograma

Descripción generada automáticamente

**Orden poli 4** **Orden poli 5**

Captura de pantalla de un celular con letras

Descripción generada automáticamente Gráfico, Histograma

Descripción generada automáticamente

**Orden poli 10**  
  
Gráfico, Histograma

Descripción generada automáticamente

**Cuando alpha=2**

En este segundo ensayo, lo vemos con **menor error**, al tener el valor de 2 en la variable alpha empezamos a usar el error cuadrático medio mientras que antes con aplha=1 era usabamos el error absoluto medio, he comparado los resultados con el el resultado del polinomio de orden 1 que su gráfica está alrededor de 0,13 mientras que los demás polinomios de mayor orden que muestro abajo el primer resultado están alrededor de 0,08. También observo que, las gráficas son más constantes que con alpha 1 y que la que más inestable se muestra es la del polinomio de orden 10.

**Orden poli 2** **Orden poli 3**

Imagen que contiene Interfaz de usuario gráfica

Descripción generada automáticamente Imagen que contiene Forma

Descripción generada automáticamente  
**Orden poli 4** **Orden poli 5**

Interfaz de usuario gráfica, Gráfico, Aplicación

Descripción generada automáticamente Interfaz de usuario gráfica, Gráfico, Aplicación

Descripción generada automáticamente  
  
**Orden poli 10**

Interfaz de usuario gráfica, Gráfico, Aplicación

Descripción generada automáticamente

**Tabla comparativa:**

{'Alpha'} {'Orden Poli'} {'Error' } {'Solución' }

{[ 1]} {[ 2]} {[0.4993 0.2243 … ]} {[113 114 119 1 … ]}

{[ 1]} {[ 3]} {[0.4993 0.2073 … ]} {[ 113 4 56 14 … ]}

{[ 1]} {[ 4]} {[0.4993 0.2076 … ]} {[ 113 4 56 119 … ]}

{[ 1]} {[ 5]} {[0.4993 0.2046 … ]} {[ 113 4 56 10 … ]}

{[ 1]} {[ 10]} {[0.4993 0.1999 … ]} {[ 113 114 119 … ]}

{[ 2]} {[ 2]} {[0.3329 0.0784 … ]} {[ 113 4 14 119 … ]}

{[ 2]} {[ 3]} {[0.3329 0.0710 … ]} {[ 113 4 56 14 … ]}

{[ 2]} {[ 4]} {[0.3329 0.0709 … ]} {[ 113 4 56 119 … ]}

{[ 2]} {[ 5]} {[0.3329 0.0693 … ]} {[ 113 4 56 43 … ]}

{[ 2]} {[ 10]} {[0.3329 0.1097 … ]} {[114 22 113 30 … ]}

**Aplha 1**

Gráfico

Descripción generada automáticamente con confianza media

Interfaz de usuario gráfica

Descripción generada automáticamente

**Alpha 2**

Interfaz de usuario gráfica

Descripción generada automáticamente

Interfaz de usuario gráfica

Descripción generada automáticamente

**Tablas de los resultados**

**Cuando Alpha =1**

**Orden del Polinomio 2**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **%** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** |
| **1** | 113 | 114 | 119 | 1 | 56 | 4 | 14 | 43 | 89 | 88 | 3 | 40 | 22 | 15 | 120 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **2** | 12 | 117 | 48 | 87 | 45 | 42 | 11 | 80 | 58 | 90 | 112 | 100 | 59 | 24 | 8 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3** | 97 | 74 | 121 | 50 | 82 | 79 | 109 | 5 | 118 | 7 | 51 | 94 | 39 | 33 | 57 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **4** | 34 | 60 | 107 | 73 | 68 | 72 | 78 | 52 | 98 | 62 | 76 | 64 | 49 | 103 | 106 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **5** | 9 | 30 | 66 | 44 | 19 | 38 | 69 | 26 | 2 | 16 | 77 | 20 | 105 | 61 | 28 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **6** | 55 | 27 | 35 | 104 | 101 | 71 | 37 | 18 | 6 | 36 | 47 | 67 | 70 | 53 | 63 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **7** | 65 | 96 | 86 | 108 | 81 | 32 | 84 | 17 | 21 | 102 | 111 | 110 | 116 | 92 | 83 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **8** | 23 | 85 | 31 | 75 | 41 | 93 | 10 | 99 | 13 | 46 | 25 | 115 | 29 | 54 | 122 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **9** | 91 | 95 |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Orden del Polinomio 3**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **%** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** |
| **1** | 113 | 4 | 56 | 14 | 119 | 22 | 43 | 88 | 110 | 65 | 97 | 68 | 100 | 120 | 15 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **2** | 118 | 11 | 55 | 104 | 12 | 7 | 116 | 115 | 63 | 73 | 99 | 67 | 109 | 30 | 10 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3** | 62 | 78 | 19 | 40 | 39 | 16 | 111 | 9 | 59 | 8 | 31 | 103 | 51 | 20 | 95 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **4** | 85 | 33 | 26 | 29 | 57 | 37 | 83 | 74 | 77 | 79 | 17 | 75 | 98 | 90 | 3 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **5** | 96 | 93 | 60 | 1 | 48 | 41 | 34 | 80 | 52 | 5 | 114 | 24 | 107 | 25 | 72 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **6** | 69 | 105 | 61 | 32 | 45 | 44 | 91 | 122 | 46 | 89 | 36 | 42 | 6 | 23 | 49 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **7** | 76 | 81 | 50 | 94 | 102 | 58 | 21 | 13 | 2 | 35 | 117 | 18 | 84 | 66 | 71 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **8** | 108 | 82 | 70 | 106 | 47 | 92 | 38 | 87 | 112 | 64 | 101 | 28 | 54 | 53 | 121 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **9** | 86 | 27 |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Orden del Polinomio 4**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **%** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** |
| **1** | **113** | **4** | **56** | **119** | **114** | **50** | **43** | **87** | **69** | **14** | **86** | **120** | **19** | **33** | **40** |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **2** | **12** | **36** | **8** | **15** | **68** | **74** | **85** | **104** | **89** | **78** | **30** | **10** | **57** | **27** | **76** |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3** | **16** | **109** | **71** | **22** | **3** | **2** | **116** | **21** | **103** | **20** | **97** | **65** | **11** | **95** | **84** |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **4** | **90** | **112** | **39** | **45** | **105** | **6** | **117** | **51** | **110** | **31** | **98** | **111** | **99** | **46** | **37** |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **5** | **62** | **66** | **79** | **118** | **77** | **9** | **41** | **93** | **64** | **7** | **115** | **82** | **91** | **92** | **60** |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **6** | **29** | **94** | **106** | **17** | **26** | **44** | **67** | **83** | **96** | **24** | **121** | **61** | **81** | **88** | **32** |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **7** | **75** | **48** | **58** | **55** | **25** | **34** | **72** | **63** | **107** | **1** | **80** | **28** | **42** | **38** | **23** |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **8** | **52** | **5** | **73** | **53** | **18** | **101** | **70** | **49** | **108** | **122** | **13** | **100** | **59** | **47** | **54** |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **9** | **102** | **35** |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Orden del Polinomio 5**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **%** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** |
| **1** | 113 | 4 | 56 | 10 | 114 | 115 | 30 | 43 | 3 | 61 | 87 | 103 | 22 | 42 | 15 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **2** | 24 | 120 | 39 | 55 | 105 | 118 | 93 | 77 | 59 | 80 | 107 | 13 | 51 | 75 | 116 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3** | 34 | 119 | 95 | 26 | 82 | 50 | 2 | 23 | 99 | 49 | 63 | 109 | 16 | 67 | 79 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **4** | 85 | 122 | 62 | 57 | 28 | 94 | 29 | 17 | 81 | 33 | 31 | 90 | 96 | 65 | 64 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **5** | 66 | 58 | 101 | 60 | 68 | 106 | 53 | 54 | 32 | 9 | 41 | 25 | 84 | 19 | 78 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **6** | 110 | 44 | 21 | 6 | 89 | 52 | 74 | 72 | 88 | 97 | 86 | 91 | 45 | 27 | 40 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **7** | 14 | 108 | 73 | 111 | 98 | 11 | 7 | 70 | 69 | 102 | 48 | 92 | 47 | 1 | 20 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **8** | 5 | 36 | 35 | 37 | 8 | 38 | 104 | 83 | 121 | 100 | 71 | 12 | 117 | 76 | 46 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **9** | 112 | 18 |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Orden del Polinomio 10**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **%** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** |
| **1** | **113** | **4** | **30** | **119** | **18** | **47** | **31** | **24** | **121** | **116** | **51** | **105** | **1** | **100** | **89** |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **2** | **103** | **45** | **9** | **44** | **11** | **94** | **39** | **36** | **99** | **19** | **78** | **70** | **62** | **81** | **35** |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3** | **2** | **88** | **38** | **34** | **90** | **37** | **48** | **12** | **68** | **65** | **16** | **117** | **7** | **118** | **20** |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **4** | **58** | **98** | **6** | **82** | **46** | **60** | **101** | **120** | **32** | **92** | **77** | **61** | **57** | **33** | **27** |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **5** | **93** | **14** | **26** | **96** | **25** | **74** | **110** | **23** | **69** | **59** | **106** | **107** | **86** | **8** | **13** |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **6** | **97** | **122** | **85** | **71** | **108** | **67** | **40** | **111** | **87** | **29** | **84** | **104** | **80** | **79** | **91** |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **7** | **64** | **21** | **102** | **55** | **56** | **115** | **73** | **22** | **76** | **49** | **5** | **10** | **66** | **54** | **43** |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **8** | **72** | **17** | **114** | **3** | **95** | **41** | **75** | **83** | **52** | **15** | **109** | **53** | **28** | **112** | **42** |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **9** | **50** | **63** |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Cuando Alpha =2**

**Orden del Polinomio 2**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| % | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** |
| **1** | 113 | 4 | 14 | 119 | 56 | 114 | 115 | 36 | 43 | 88 | 15 | 120 | 118 | 57 | 47 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **2** | 98 | 40 | 39 | 42 | 44 | 22 | 90 | 58 | 89 | 20 | 12 | 1 | 59 | 38 | 121 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3** | 100 | 74 | 73 | 109 | 97 | 35 | 66 | 65 | 49 | 8 | 78 | 52 | 3 | 24 | 11 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **4** | 95 | 19 | 9 | 7 | 62 | 94 | 103 | 102 | 70 | 29 | 50 | 51 | 2 | 106 | 26 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **5** | 55 | 6 | 101 | 27 | 63 | 76 | 80 | 67 | 79 | 16 | 18 | 116 | 17 | 84 | 69 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **6** | 53 | 72 | 104 | 71 | 112 | 122 | 33 | 31 | 86 | 28 | 30 | 105 | 37 | 61 | 45 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **7** | 54 | 82 | 81 | 10 | 34 | 48 | 32 | 91 | 60 | 5 | 21 | 46 | 68 | 96 | 87 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **8** | 83 | 85 | 111 | 99 | 75 | 117 | 25 | 77 | 110 | 108 | 64 | 13 | 93 | 92 | 107 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **9** | 23 | 41 |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Orden del Polinomio 3**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **%** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** |
| **1** | 113 | 4 | 56 | 14 | 119 | 22 | 43 | 88 | 120 | 15 | 115 | 116 | 114 | 51 | 1 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **2** | 65 | 97 | 104 | 110 | 118 | 7 | 12 | 68 | 100 | 37 | 95 | 91 | 63 | 30 | 78 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3** | 62 | 109 | 103 | 99 | 111 | 39 | 40 | 33 | 10 | 75 | 84 | 80 | 16 | 18 | 31 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **4** | 85 | 27 | 19 | 122 | 86 | 26 | 67 | 79 | 29 | 87 | 3 | 2 | 107 | 61 | 93 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **5** | 105 | 48 | 60 | 13 | 11 | 34 | 6 | 96 | 69 | 25 | 73 | 55 | 74 | 90 | 66 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **6** | 57 | 59 | 24 | 77 | 41 | 83 | 28 | 21 | 117 | 89 | 46 | 81 | 47 | 17 | 52 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **7** | 5 | 20 | 72 | 8 | 32 | 50 | 36 | 82 | 23 | 76 | 102 | 98 | 9 | 58 | 71 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **8** | 92 | 35 | 64 | 108 | 42 | 45 | 94 | 53 | 106 | 54 | 121 | 70 | 44 | 101 | 38 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **9** | 49 | 112 |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Orden del Polinomio 4**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **%** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** |
| **1** | 113 | 4 | 56 | 119 | 14 | 43 | 114 | 50 | 31 | 86 | 19 | 120 | 40 | 39 | 65 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **2** | 115 | 1 | 51 | 33 | 104 | 106 | 12 | 15 | 55 | 61 | 93 | 3 | 89 | 91 | 76 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3** | 29 | 109 | 2 | 116 | 68 | 36 | 71 | 110 | 52 | 87 | 22 | 112 | 84 | 69 | 105 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **4** | 79 | 16 | 6 | 41 | 11 | 17 | 95 | 85 | 26 | 5 | 37 | 24 | 103 | 90 | 21 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **5** | 7 | 60 | 99 | 30 | 98 | 97 | 77 | 62 | 64 | 34 | 9 | 117 | 45 | 74 | 66 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **6** | 46 | 58 | 81 | 8 | 20 | 82 | 121 | 53 | 75 | 94 | 10 | 83 | 67 | 92 | 107 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **7** | 32 | 101 | 44 | 27 | 111 | 88 | 25 | 63 | 118 | 28 | 80 | 57 | 72 | 54 | 96 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **8** | 100 | 73 | 122 | 42 | 70 | 23 | 48 | 78 | 38 | 49 | 13 | 35 | 47 | 59 | 18 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **9** | 102 | 108 |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Orden del Polinomio 5**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **%** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** |
| **1** | 113 | 4 | 56 | 43 | 119 | 87 | 114 | 75 | 14 | 50 | 115 | 51 | 11 | 120 | 24 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **2** | 39 | 37 | 118 | 40 | 22 | 15 | 10 | 78 | 95 | 97 | 65 | 63 | 107 | 109 | 116 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3** | 2 | 33 | 52 | 79 | 34 | 101 | 29 | 57 | 81 | 67 | 82 | 105 | 103 | 99 | 55 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **4** | 59 | 88 | 26 | 77 | 85 | 80 | 61 | 3 | 19 | 16 | 1 | 84 | 9 | 28 | 7 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **5** | 62 | 106 | 58 | 89 | 41 | 53 | 66 | 31 | 96 | 68 | 42 | 60 | 64 | 30 | 117 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **6** | 86 | 18 | 90 | 32 | 93 | 73 | 71 | 45 | 44 | 94 | 110 | 54 | 47 | 23 | 72 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **7** | 122 | 5 | 36 | 8 | 111 | 98 | 48 | 69 | 27 | 70 | 121 | 100 | 12 | 21 | 83 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **8** | 102 | 6 | 108 | 74 | 91 | 25 | 92 | 49 | 104 | 17 | 38 | 13 | 20 | 76 | 112 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **9** | 35 | 46 |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Orden del Polinomio 10**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **%** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** |
| **1** | 113 | 4 | 56 | 43 | 119 | 87 | 114 | 75 | 14 | 50 | 115 | 51 | 11 | 120 | 24 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **2** | 39 | 37 | 118 | 40 | 22 | 15 | 10 | 78 | 95 | 97 | 65 | 63 | 107 | 109 | 116 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3** | 2 | 33 | 52 | 79 | 34 | 101 | 29 | 57 | 81 | 67 | 82 | 105 | 103 | 99 | 55 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **4** | 59 | 88 | 26 | 77 | 85 | 80 | 61 | 3 | 19 | 16 | 1 | 84 | 9 | 28 | 7 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **5** | 62 | 106 | 58 | 89 | 41 | 53 | 66 | 31 | 96 | 68 | 42 | 60 | 64 | 30 | 117 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **6** | 86 | 18 | 90 | 32 | 93 | 73 | 71 | 45 | 44 | 94 | 110 | 54 | 47 | 23 | 72 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **7** | 122 | 5 | 36 | 8 | 111 | 98 | 48 | 69 | 27 | 70 | 121 | 100 | 12 | 21 | 83 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **8** | 102 | 6 | 108 | 74 | 91 | 25 | 92 | 49 | 104 | 17 | 38 | 13 | 20 | 76 | 112 |
| **%** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **9** | 35 | 46 |  |  |  |  |  |  |  |  |  |  |  |  |  |