МИНИСТЕРСТВО ОБРАЗОВАНИЯ И НАУКИ РОССИЙСКОЙ ФЕДЕРАЦИИ

ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ БЮДЖЕТНОЕ

ОБРАЗОВАТЕЛЬНОЕ УЧРЕЖДЕНИЕ

ВЫСШЕГО ПРОФЕССИОНАЛЬНОГО ОБРАЗОВАНИЯ

МОСКОВСКИЙ АВИАЦИОННЫЙ ИНСТИТУТ

(национальный исследовательский университет)

«МАИ»

Кафедра 806

Отчет по расчетно-графической работе

По дисциплине **«Численные методы»**

**Вариант 10**

**Задание 9**

Выполнил студент группы 3О-210Б:

Кофман М.С.

Принял:

Старший преподаватель каф. №806

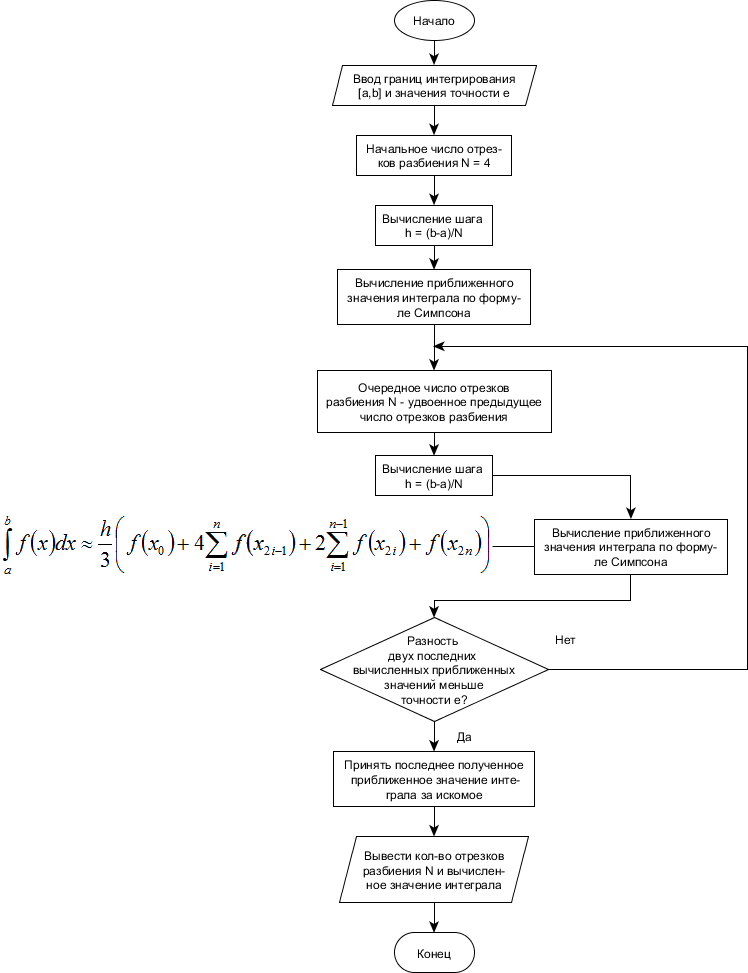
Кринецкий Олег Евгеньевич

Москва, 2015

# Задание:

Методом Симпсона с точностью Е = 0,001 вычислить определенный интеграл.

# Структурная схема алгоритма метода Симпсона:



Текст программы на языке Visual Basic 6.0:

Dim a, b, Eps, H, X, N, Integ, Integ2 As Double, Func As Integer, str As String

Private Sub Check1\_Click()

If Text3.Visible = False Then

Text3.Visible = True

Label1(0).Visible = True

Else

Text3.Visible = False

Label1(0).Visible = Flase

End If

End Sub

Private Sub Text1\_Click()

Text1.Text = ""

End Sub

Private Sub Text2\_Click()

Text2.Text = ""

End Sub

Private Sub Text3\_Click()

Text3.Text = ""

End Sub

Private Sub Text4\_Click()

Text4.Text = ""

End Sub

Private Sub Text5\_Click()

Text5.Text = ""

End Sub

Private Sub Text7\_Click()

Text7.Text = ""

End Sub

Private Sub Text8\_Click()

Text8.Text = ""

End Sub

Private Sub Text9\_Click()

Text9.Text = ""

End Sub

Private Sub Command1\_Click()

a = Val(Text2.Text)

b = Val(Text1.Text)

Eps = Val(Text9.Text)

N = 4

Integ = 0

Integ2 = 0

Frame3.Visible = True

End Sub

Private Sub Command2\_Click()

If Option1.Value = True Then Func = 1

If Option2.Value = True Then Func = 2

If Option3.Value = True Then Func = 3

If Option4.Value = True Then Func = 4

If Option5.Value = True Then Func = 5

If Option6.Value = True Then Func = 6

If Option7.Value = True Then Func = 7

If Check1.Value = 1 Then

Select Case Func

Case 1

H = (b - a) / N

Integ = Val(Text3.Text) ^ ((Val(Text4.Text) \* (1 \* ((a + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))) + Val(Text3.Text) ^ ((Val(Text4.Text) \* (1 \* ((b + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

X = a

For i = 1 To N - 2

X = X + H

If i Mod 2 = 0 Then

Integ = Integ + 2 \* Val(Text3.Text) ^ ((Val(Text4.Text) \* (1 \* ((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

Else

Integ = Integ + 4 \* Val(Text3.Text) ^ ((Val(Text4.Text) \* (1 \* ((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

End If

Next

Integ = Integ \* H / 3

Do

Integ2 = Integ

N = N \* 2

H = (b - a) / N

Integ = Val(Text3.Text) ^ ((Val(Text4.Text) \* (1 \* ((a + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))) + Val(Text3.Text) ^ ((Val(Text4.Text) \* (1 \* ((b + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

X = a

For i = 1 To N - 2

X = X + H

If i Mod 2 = 0 Then

Integ = Integ + 2 \* Val(Text3.Text) ^ ((Val(Text4.Text) \* (1 \* ((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

Else

Integ = Integ + 4 \* Val(Text3.Text) ^ ((Val(Text4.Text) \* (1 \* ((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

End If

Next

Integ = Integ \* H / 3

Loop While Abs(Integ - Integ2) > 10 ^ (-Eps)

Case 2

H = (b - a) / N

Integ = Val(Text3.Text) ^ ((Val(Text4.Text) \* (Sin((a + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))) + Val(Text3.Text) ^ ((Val(Text4.Text) \* (Sin((b + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

X = a

For i = 1 To N - 2

X = X + H

If i Mod 2 = 0 Then

Integ = Integ + 2 \* Val(Text3.Text) ^ ((Val(Text4.Text) \* (Sin((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

Else

Integ = Integ + 4 \* Val(Text3.Text) ^ ((Val(Text4.Text) \* (Sin((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

End If

Next

Integ = Integ \* H / 3

Do

Integ2 = Integ

N = N \* 2

H = (b - a) / N

Integ = Val(Text3.Text) ^ ((Val(Text4.Text) \* (Sin((a + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))) + Val(Text3.Text) ^ ((Val(Text4.Text) \* (Sin((b + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

X = a

For i = 1 To N - 2

X = X + H

If i Mod 2 = 0 Then

Integ = Integ + 2 \* Val(Text3.Text) ^ ((Val(Text4.Text) \* (Sin((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

Else

Integ = Integ + 4 \* Val(Text3.Text) ^ ((Val(Text4.Text) \* (Sin((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

End If

Next

Integ = Integ \* H / 3

Loop While Abs(Integ - Integ2) > 10 ^ (-Eps)

Case 3

H = (b - a) / N

Integ = Val(Text3.Text) ^ ((Val(Text4.Text) \* (Cos((a + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))) + Val(Text3.Text) ^ ((Val(Text4.Text) \* (Cos((b + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

X = a

For i = 1 To N - 2

X = X + H

If i Mod 2 = 0 Then

Integ = Integ + 2 \* Val(Text3.Text) ^ ((Val(Text4.Text) \* (Cos((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

Else

Integ = Integ + 4 \* Val(Text3.Text) ^ ((Val(Text4.Text) \* (Cos((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

End If

Next

Integ = Integ \* H / 3

Do

Integ2 = Integ

N = N \* 2

H = (b - a) / N

Integ = Val(Text3.Text) ^ ((Val(Text4.Text) \* (Cos((a + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))) + Val(Text3.Text) ^ ((Val(Text4.Text) \* (Cos((b + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

X = a

For i = 1 To N - 2

X = X + H

If i Mod 2 = 0 Then

Integ = Integ + 2 \* Val(Text3.Text) ^ ((Val(Text4.Text) \* (Cos((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

Else

Integ = Integ + 4 \* Val(Text3.Text) ^ ((Val(Text4.Text) \* (Cos((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

End If

Next

Integ = Integ \* H / 3

Loop While Abs(Integ - Integ2) > 10 ^ (-Eps)

Case 4

H = (b - a) / N

Integ = Val(Text3.Text) ^ ((Val(Text4.Text) \* (Tan((a + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))) + Val(Text3.Text) ^ ((Val(Text4.Text) \* (Tan((b + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

X = a

For i = 1 To N - 2

X = X + H

If i Mod 2 = 0 Then

Integ = Integ + 2 \* Val(Text3.Text) ^ ((Val(Text4.Text) \* (Tan((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

Else

Integ = Integ + 4 \* Val(Text3.Text) ^ ((Val(Text4.Text) \* (Tan((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

End If

Next

Integ = Integ \* H / 3

Do

Integ2 = Integ

N = N \* 2

H = (b - a) / N

Integ = Val(Text3.Text) ^ ((Val(Text4.Text) \* (Tan((a + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))) + Val(Text3.Text) ^ ((Val(Text4.Text) \* (Tan((b + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

X = a

For i = 1 To N - 2

X = X + H

If i Mod 2 = 0 Then

Integ = Integ + 2 \* Val(Text3.Text) ^ ((Val(Text4.Text) \* (Tan((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

Else

Integ = Integ + 4 \* Val(Text3.Text) ^ ((Val(Text4.Text) \* (Tan((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

End If

Next

Integ = Integ \* H / 3

Loop While Abs(Integ - Integ2) > 10 ^ (-Eps)

Case 5

H = (b - a) / N

Integ = Val(Text3.Text) ^ ((Val(Text4.Text) \* (1 / Tan((a + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))) + Val(Text3.Text) ^ ((Val(Text4.Text) \* (1 / Tan((b + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

X = a

For i = 1 To N - 2

X = X + H

If i Mod 2 = 0 Then

Integ = Integ + 2 \* Val(Text3.Text) ^ ((Val(Text4.Text) \* (1 / Tan((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

Else

Integ = Integ + 4 \* Val(Text3.Text) ^ ((Val(Text4.Text) \* (1 / Tan((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

End If

Next

Integ = Integ \* H / 3

Do

Integ2 = Integ

N = N \* 2

H = (b - a) / N

Integ = Val(Text3.Text) ^ ((Val(Text4.Text) \* (1 / Tan((a + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))) + Val(Text3.Text) ^ ((Val(Text4.Text) \* (1 / Tan((b + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

X = a

For i = 1 To N - 2

X = X + H

If i Mod 2 = 0 Then

Integ = Integ + 2 \* Val(Text3.Text) ^ ((Val(Text4.Text) \* (1 / Tan((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

Else

Integ = Integ + 4 \* Val(Text3.Text) ^ ((Val(Text4.Text) \* (1 / Tan((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

End If

Next

Integ = Integ \* H / 3

Loop While Abs(Integ - Integ2) > 10 ^ (-Eps)

Case 6

H = (b - a) / N

Integ = Val(Text3.Text) ^ ((Val(Text4.Text) \* (Log((a + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))) + Val(Text3.Text) ^ ((Val(Text4.Text) \* (Log((b + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

X = a

For i = 1 To N - 2

X = X + H

If i Mod 2 = 0 Then

Integ = Integ + 2 \* Val(Text3.Text) ^ ((Val(Text4.Text) \* (Log((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

Else

Integ = Integ + 4 \* Val(Text3.Text) ^ ((Val(Text4.Text) \* (Log((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

End If

Next

Integ = Integ \* H / 3

Do

Integ2 = Integ

N = N \* 2

H = (b - a) / N

Integ = Val(Text3.Text) ^ ((Val(Text4.Text) \* (Log((a + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))) + Val(Text3.Text) ^ ((Val(Text4.Text) \* (Log((b + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

X = a

For i = 1 To N - 2

X = X + H

If i Mod 2 = 0 Then

Integ = Integ + 2 \* Val(Text3.Text) ^ ((Val(Text4.Text) \* (Log((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

Else

Integ = Integ + 4 \* Val(Text3.Text) ^ ((Val(Text4.Text) \* (Log((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

End If

Next

Integ = Integ \* H / 3

Loop While Abs(Integ - Integ2) > 10 ^ (-Eps)

Case 7

H = (b - a) / N

Integ = Val(Text3.Text) ^ ((Val(Text4.Text) \* (Exp((a + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))) + Val(Text3.Text) ^ ((Val(Text4.Text) \* (Exp((b + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

X = a

For i = 1 To N - 2

X = X + H

If i Mod 2 = 0 Then

Integ = Integ + 2 \* Val(Text3.Text) ^ ((Val(Text4.Text) \* (Exp((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

Else

Integ = Integ + 4 \* Val(Text3.Text) ^ ((Val(Text4.Text) \* (Exp((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

End If

Next

Integ = Integ \* H / 3

Do

Integ2 = Integ

N = N \* 2

H = (b - a) / N

Integ = Val(Text3.Text) ^ ((Val(Text4.Text) \* (Exp((a + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))) + Val(Text3.Text) ^ ((Val(Text4.Text) \* (Exp((b + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

X = a

For i = 1 To N - 2

X = X + H

If i Mod 2 = 0 Then

Integ = Integ + 2 \* Val(Text3.Text) ^ ((Val(Text4.Text) \* (Exp((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

Else

Integ = Integ + 4 \* Val(Text3.Text) ^ ((Val(Text4.Text) \* (Exp((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)))

End If

Next

Integ = Integ \* H / 3

Loop While Abs(Integ - Integ2) > 10 ^ (-Eps)

End Select

Else

Select Case Func

Case 1

H = (b - a) / N

Integ = (Val(Text4.Text) \* (1 \* ((a + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)) + (Val(Text4.Text) \* (1 \* ((b + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

X = a

For i = 1 To N - 2

X = X + H

If i Mod 2 = 0 Then

Integ = Integ + 2 \* (Val(Text4.Text) \* (1 \* ((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

Else

Integ = Integ + 4 \* (Val(Text4.Text) \* (1 \* ((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

End If

Next

Integ = Integ \* H / 3

Do

Integ2 = Integ

N = N \* 2

H = (b - a) / N

Integ = (Val(Text4.Text) \* (1 \* ((a + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)) + (Val(Text4.Text) \* (1 \* ((b + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

X = a

For i = 1 To N - 2

X = X + H

If i Mod 2 = 0 Then

Integ = Integ + 2 \* (Val(Text4.Text) \* (1 \* ((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

Else

Integ = Integ + 4 \* (Val(Text4.Text) \* (1 \* ((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

End If

Next

Integ = Integ \* H / 3

Loop While Abs(Integ - Integ2) > 10 ^ (-Eps)

Case 2

H = (b - a) / N

Integ = (Val(Text4.Text) \* (Sin((a + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)) + (Val(Text4.Text) \* (Sin((b + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

X = a

For i = 1 To N - 2

X = X + H

If i Mod 2 = 0 Then

Integ = Integ + 2 \* (Val(Text4.Text) \* (Sin((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

Else

Integ = Integ + 4 \* (Val(Text4.Text) \* (Sin((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

End If

Next

Integ = Integ \* H / 3

Do

Integ2 = Integ

N = N \* 2

H = (b - a) / N

Integ = (Val(Text4.Text) \* (Sin((a + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)) + (Val(Text4.Text) \* (Sin((b + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

X = a

For i = 1 To N - 2

X = X + H

If i Mod 2 = 0 Then

Integ = Integ + 2 \* (Val(Text4.Text) \* (Sin((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

Else

Integ = Integ + 4 \* (Val(Text4.Text) \* (Sin((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

End If

Next

Integ = Integ \* H / 3

Loop While Abs(Integ - Integ2) > 10 ^ (-Eps)

Case 3

H = (b - a) / N

Integ = (Val(Text4.Text) \* (Cos((a + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)) + (Val(Text4.Text) \* (Cos((b + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

X = a

For i = 1 To N - 2

X = X + H

If i Mod 2 = 0 Then

Integ = Integ + 2 \* (Val(Text4.Text) \* (Cos((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

Else

Integ = Integ + 4 \* (Val(Text4.Text) \* (Cos((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

End If

Next

Integ = Integ \* H / 3

Do

Integ2 = Integ

N = N \* 2

H = (b - a) / N

Integ = (Val(Text4.Text) \* (Cos((a + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)) + (Val(Text4.Text) \* (Cos((b + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

X = a

For i = 1 To N - 2

X = X + H

If i Mod 2 = 0 Then

Integ = Integ + 2 \* (Val(Text4.Text) \* (Cos((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

Else

Integ = Integ + 4 \* (Val(Text4.Text) \* (Cos((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

End If

Next

Integ = Integ \* H / 3

Loop While Abs(Integ - Integ2) > 10 ^ (-Eps)

Case 4

H = (b - a) / N

Integ = (Val(Text4.Text) \* (Tan((a + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)) + (Val(Text4.Text) \* (Tan((b + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

X = a

For i = 1 To N - 2

X = X + H

If i Mod 2 = 0 Then

Integ = Integ + 2 \* (Val(Text4.Text) \* (Tan((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

Else

Integ = Integ + 4 \* (Val(Text4.Text) \* (Tan((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

End If

Next

Integ = Integ \* H / 3

Do

Integ2 = Integ

N = N \* 2

H = (b - a) / N

Integ = (Val(Text4.Text) \* (Tan((a + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)) + (Val(Text4.Text) \* (Tan((b + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

X = a

For i = 1 To N - 2

X = X + H

If i Mod 2 = 0 Then

Integ = Integ + 2 \* (Val(Text4.Text) \* (Tan((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

Else

Integ = Integ + 4 \* (Val(Text4.Text) \* (Tan((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

End If

Next

Integ = Integ \* H / 3

Loop While Abs(Integ - Integ2) > 10 ^ (-Eps)

Case 5

H = (b - a) / N

Integ = (Val(Text4.Text) \* (1 / Tan((a + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)) + (Val(Text4.Text) \* (1 / Tan((b + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

X = a

For i = 1 To N - 2

X = X + H

If i Mod 2 = 0 Then

Integ = Integ + 2 \* (Val(Text4.Text) \* (1 / Tan((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

Else

Integ = Integ + 4 \* (Val(Text4.Text) \* (1 / Tan((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

End If

Next

Integ = Integ \* H / 3

Do

Integ2 = Integ

N = N \* 2

H = (b - a) / N

Integ = (Val(Text4.Text) \* (1 / Tan((a + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)) + (Val(Text4.Text) \* (1 / Tan((b + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

X = a

For i = 1 To N - 2

X = X + H

If i Mod 2 = 0 Then

Integ = Integ + 2 \* (Val(Text4.Text) \* (1 / Tan((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

Else

Integ = Integ + 4 \* (Val(Text4.Text) \* (1 / Tan((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

End If

Next

Integ = Integ \* H / 3

Loop While Abs(Integ - Integ2) > 10 ^ (-Eps)

Case 6

H = (b - a) / N

Integ = (Val(Text4.Text) \* (Log((a + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)) + (Val(Text4.Text) \* (Log((b + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

X = a

For i = 1 To N - 2

X = X + H

If i Mod 2 = 0 Then

Integ = Integ + 2 \* (Val(Text4.Text) \* (Log((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

Else

Integ = Integ + 4 \* (Val(Text4.Text) \* (Log((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

End If

Next

Integ = Integ \* H / 3

Do

Integ2 = Integ

N = N \* 2

H = (b - a) / N

Integ = (Val(Text4.Text) \* (Log((a + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)) + (Val(Text4.Text) \* (Log((b + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

X = a

For i = 1 To N - 2

X = X + H

If i Mod 2 = 0 Then

Integ = Integ + 2 \* (Val(Text4.Text) \* (Log((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

Else

Integ = Integ + 4 \* (Val(Text4.Text) \* (Log((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

End If

Next

Integ = Integ \* H / 3

Loop While Abs(Integ - Integ2) > 10 ^ (-Eps)

Case 7

H = (b - a) / N

Integ = (Val(Text4.Text) \* (Exp((a + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)) + (Val(Text4.Text) \* (Exp((b + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

X = a

For i = 1 To N - 2

X = X + H

If i Mod 2 = 0 Then

Integ = Integ + 2 \* (Val(Text4.Text) \* (Exp((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

Else

Integ = Integ + 4 \* (Val(Text4.Text) \* (Exp((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

End If

Next

Integ = Integ \* H / 3

Do

Integ2 = Integ

N = N \* 2

H = (b - a) / N

Integ = (Val(Text4.Text) \* (Exp((a + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text)) + (Exp(Text4.Text) \* (Log((b + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

X = a

For i = 1 To N - 2

X = X + H

If i Mod 2 = 0 Then

Integ = Integ + 2 \* (Val(Text4.Text) \* (Exp((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

Else

Integ = Integ + 4 \* (Val(Text4.Text) \* (Exp((X + Val(Text7.Text)) ^ Val(Text8.Text))) ^ Val(Text5.Text))

End If

Next

Integ = Integ \* H / 3

Loop While Abs(Integ - Integ2) > 10 ^ (-Eps)

End Select

End If

str = "Потребовалось " & N & " отрезков разбиений" & vbCrLf & "Интеграл равен " & Round(Integ2, Eps)

Text6.Text = str

Frame6.Visible = True

sFile = ".\Output.txt"

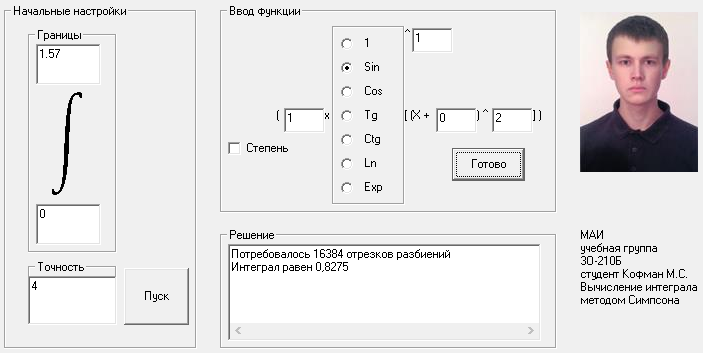
Open sFile For Output As #1

Print #1, Text6.Text

Close #1

End Sub

Скриншот программы**:**

****

# Литература:

1. Пирумов У. Г. Численные методы, Москва, издательство МАИ 1998г.
2. 4us Самоучитель Visual Basic 6.0, http://vbzero.narod.ru (18.04.2015)