

→CODES:=

```
#define SHORT_SIG_LENGTH 88
#define OFFSET 5
double short_InputSignal_1kHz_15Hz[SHORT_SIG_LENGTH]=
{
    +0.0000000000f, +0.5924659585f, -0.0947343455f, +0.1913417162f,
+1.0000000000f, +0.4174197128f, +0.3535533906f, +1.2552931065f,
+0.8660254038f, +0.4619397663f, +1.3194792169f, +1.1827865776f,
+0.5000000000f, +1.1827865776f, +1.3194792169f, +0.4619397663f,
+0.8660254038f, +1.2552931065f, +0.3535533906f, +0.4174197128f,
+1.0000000000f, +0.1913417162f, -0.0947343455f, +0.5924659585f,
-0.0000000000f, -0.5924659585f, +0.0947343455f, -0.1913417162f, -
1.0000000000f, -0.4174197128f, -0.3535533906f, -1.2552931065f,
-0.8660254038f, -0.4619397663f, -1.3194792169f, -1.1827865776f, -
0.5000000000f, -1.1827865776f, -1.3194792169f, -0.4619397663f,
-0.8660254038f, -1.2552931065f, -0.3535533906f, -0.4174197128f, -
1.0000000000f, -0.1913417162f, +0.0947343455f, -0.5924659585f,
+0.0000000000f, +0.5924659585f, -0.0947343455f, +0.1913417162f,
+1.0000000000f, +0.4174197128f, +0.3535533906f, +1.2552931065f,
+0.8660254038f, +0.4619397663f, +1.3194792169f, +1.1827865776f,
+0.5000000000f, +1.1827865776f, +1.3194792169f, +0.4619397663f,
+0.8660254038f, +1.2552931065f, +0.3535533906f, +0.4174197128f,
+1.0000000000f, +0.1913417162f, -0.0947343455f, +0.5924659585f,
+0.0000000000f, -0.5924659585f, +0.0947343455f, -0.1913417162f, -
1.0000000000f, -0.4174197128f, -0.3535533906f, -1.2552931065f,
-0.8660254038f, -0.4619397663f, -1.3194792169f, -1.1827865776f, -
0.5000000000f, -1.1827865776f, -1.3194792169f, -0.4619397663f,
};
double output_signal_arr[SHORT_SIG_LENGTH];
void plot_both(void);
void calc_first_difference(double *sig_src_arr, double *sig_dest_arr,uint32_t
sig_length);
void setup() {
    Serial.begin(9600);
    calc_first_difference(&short_InputSignal_1kHz_15Hz[0],&output_signal_arr[0],
SHORT_SIG_LENGTH);
    plot_both();
}
void loop() {
}
void plot_both(void)
{
    uint32_t i;
    for(i=0;i<SHORT_SIG_LENGTH;i++){
        Serial.print(short_InputSignal_1kHz_15Hz[i]+OFFSET);
        Serial.print(",");
        Serial.println(output_signal_arr[i]);
        delay(10);
    }
}
```

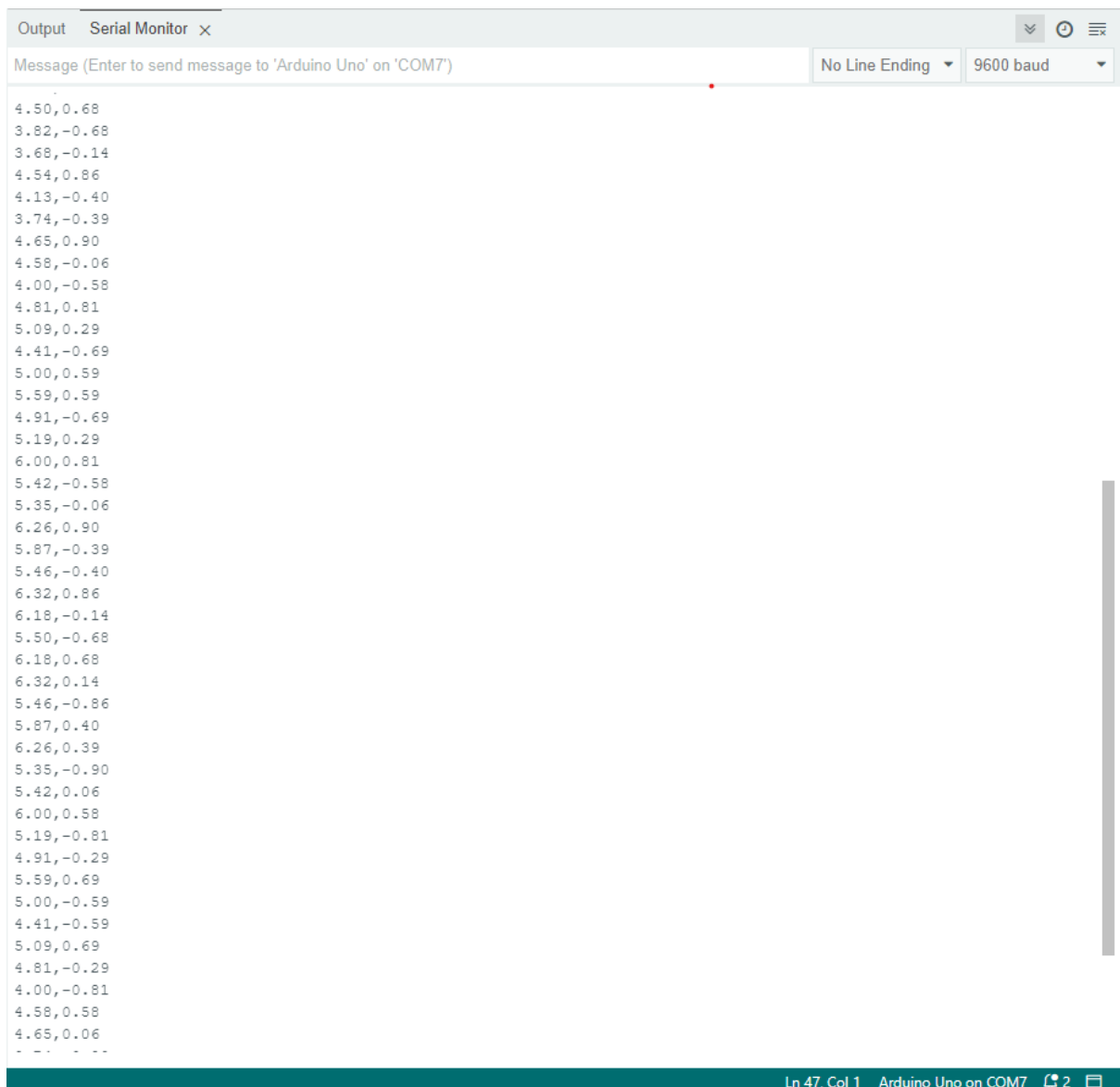
```
    }  
}  
  
void calc_first_difference(double *sig_src_arr, double *sig_dest_arr, uint32_t  
sig_length)  
{  
    uint32_t i;  
    for(i=0; i<sig_length; i++)  
    {  
        sig_dest_arr[i] = sig_src_arr[i] - sig_src_arr[i-1];  
    }  
}
```

→SERIAL MONITOR:=

OutputSerial Monitor ×

Message (Enter to send message to 'Arduino Uno' on 'COM7')No Line Ending9600 baud

5.00,0.00
5.59,0.59
4.91,-0.69
5.19,0.29
6.00,0.81
5.42,-0.58
5.35,-0.06
6.26,0.90
5.87,-0.39
5.46,-0.40
6.32,0.86
6.18,-0.14
5.50,-0.68
6.18,0.68
6.32,0.14
5.46,-0.86
5.87,0.40
6.26,0.39
5.35,-0.90
5.42,0.06
6.00,0.58
5.19,-0.81
4.91,-0.29
5.59,0.69
5.00,-0.59
4.41,-0.59
5.09,0.69
4.81,-0.29
4.00,-0.81
4.58,0.58
4.65,0.06
3.74,-0.90
4.13,0.39
4.54,0.40
3.68,-0.86
3.82,0.14
4.50,0.68
3.82,-0.68
3.68,-0.14
4.54,0.86
4.13,-0.40
3.74,-0.39
4.65,0.90
4.58,-0.06



→SERIAL PLOTTER :=

