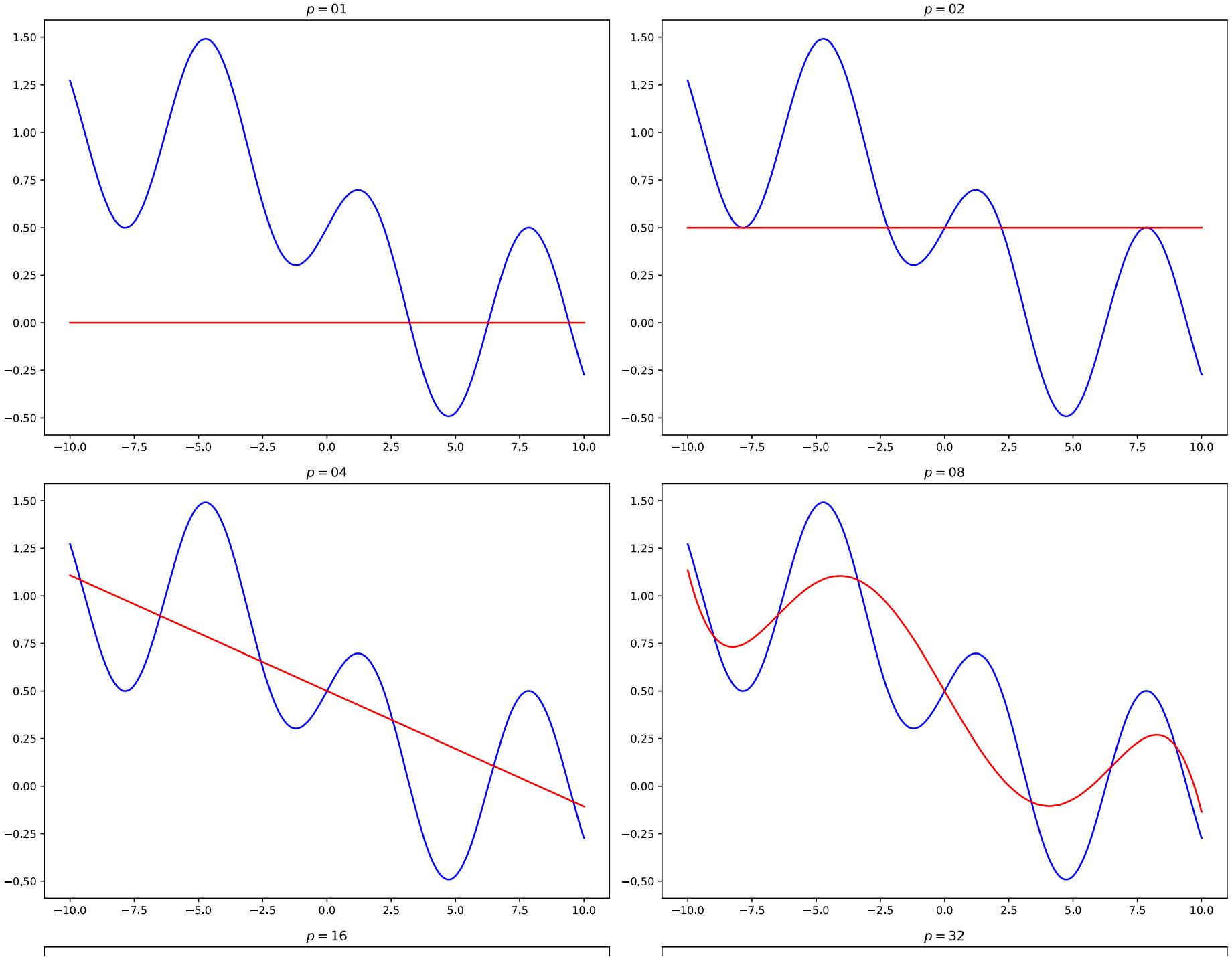
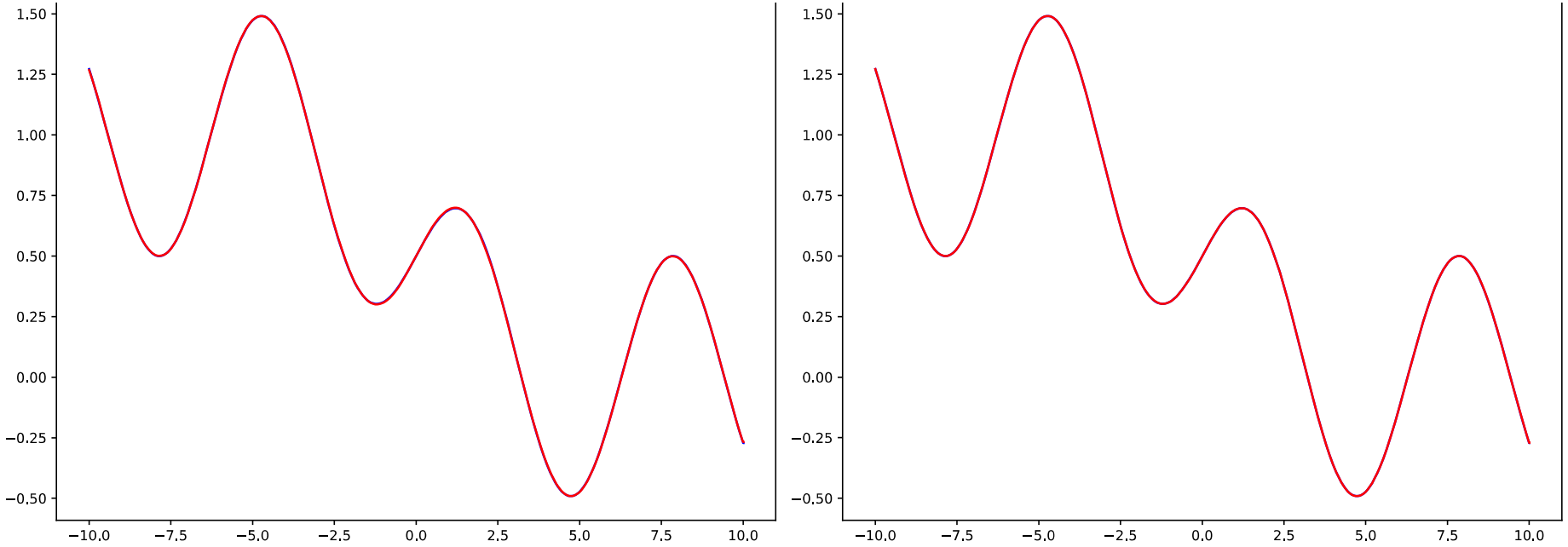
* results

*

01. plot the input data in blue and the polynomial approximations with varying degrees in red ($p = 1, 2, 4, 8, 16, 32$)

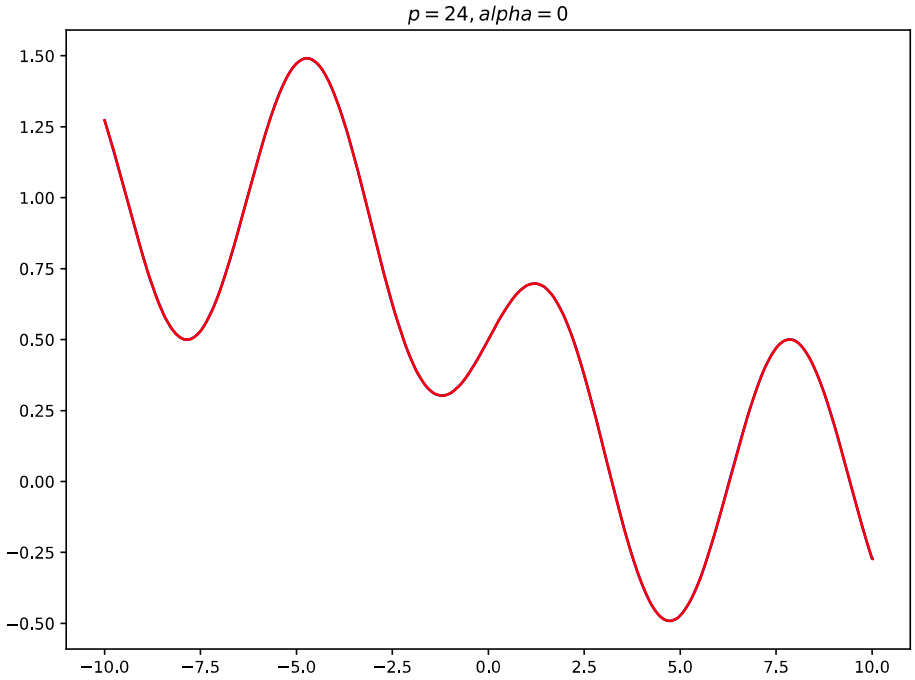
In [ ]:
```
plot_polynomial_regression_3x2(x, y, h_01, '$p = 01$', h_02, '$p = 02$', h_04, '$p = 04$', h_08, '$p = 08$', h_16, '$p = 16$', h_32
```

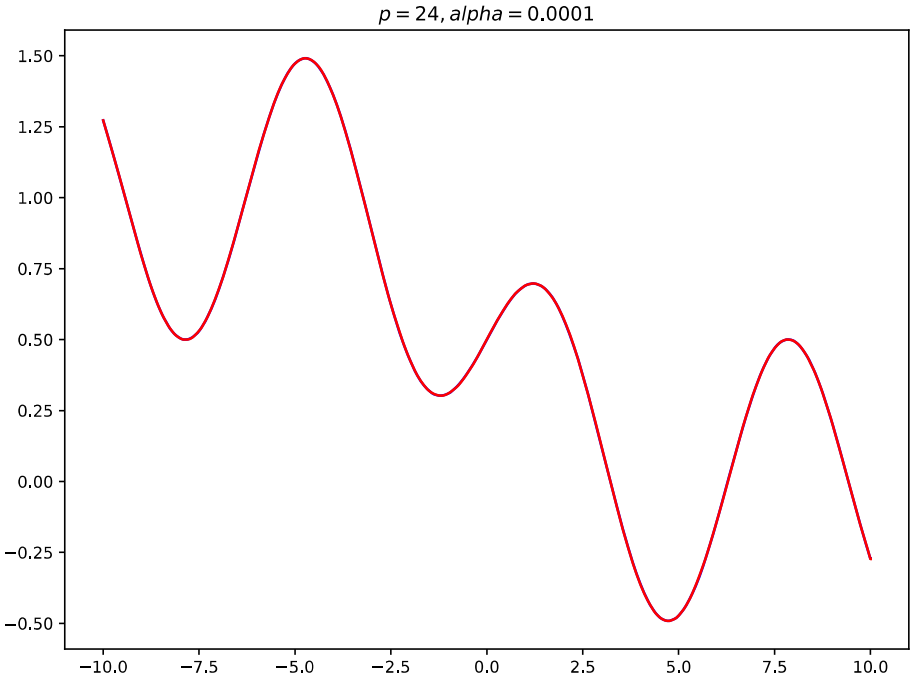

$p = 01$
$p = 02$
$p = 04$
$p = 08$
$p = 16$
$p = 32$
1.50
1.25
1.00
0.75
0.50
0.25
0.00
−0.25
−0.50
−10.0
−7.5
−5.0
−2.5
0.0
2.5
5.0
7.5
10.0

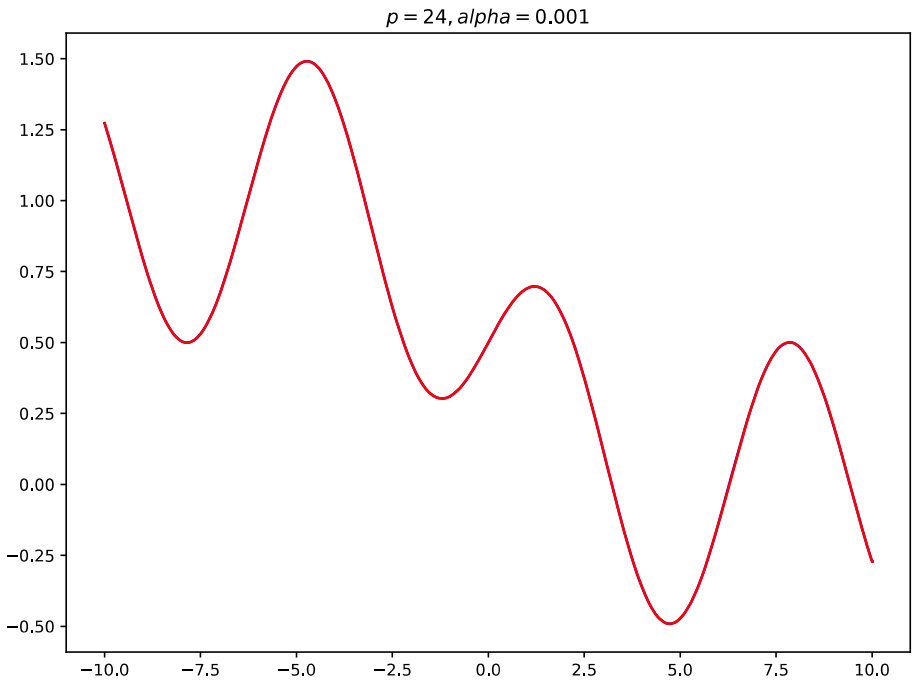


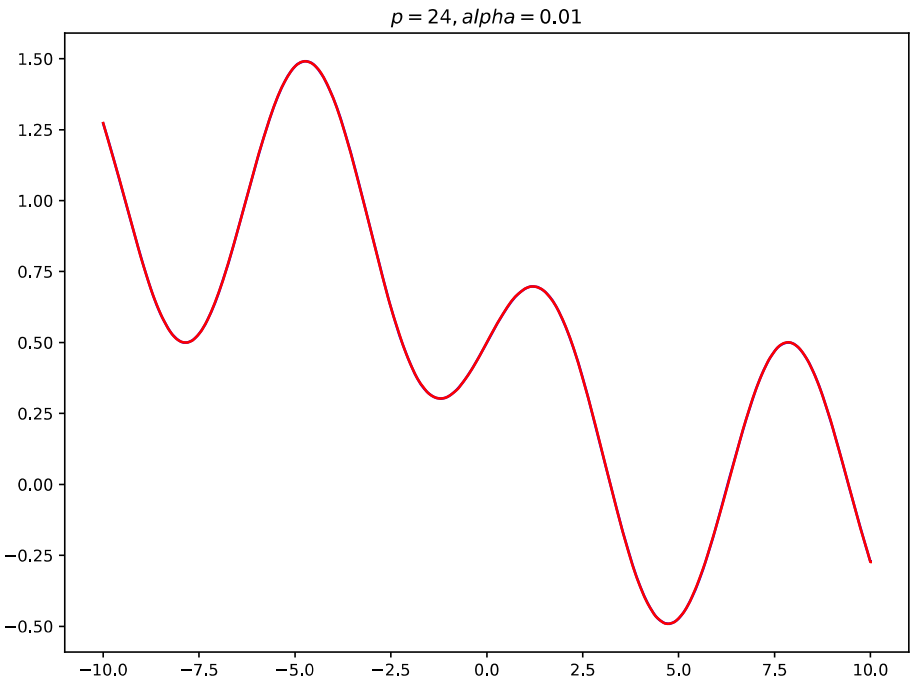
02. plot the input data in blue and the polynomial approximations with varying regularization parameters at $p = 24$ ($\alpha = 0, 0.0001, 0.001, 0.01, 0.1, 1$)

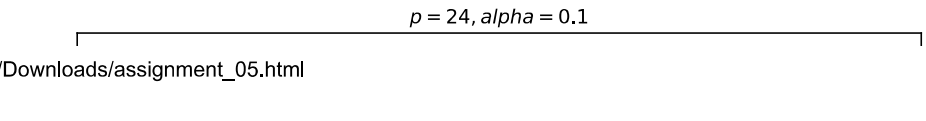
In [ ]:
```
plot_polynomial_regression_3x2(x, y, h_24_0, '$p = 24, alpha = 0$', h_24_00001, '$p = 24, alpha = 0.0001$', h_24_0001, '$p = 24, a
```

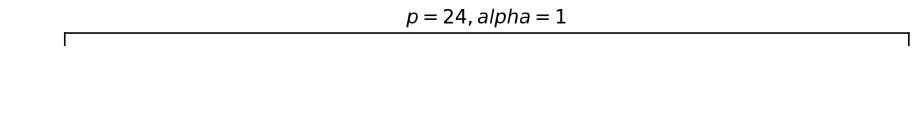

$p = 24, alpha = 0$

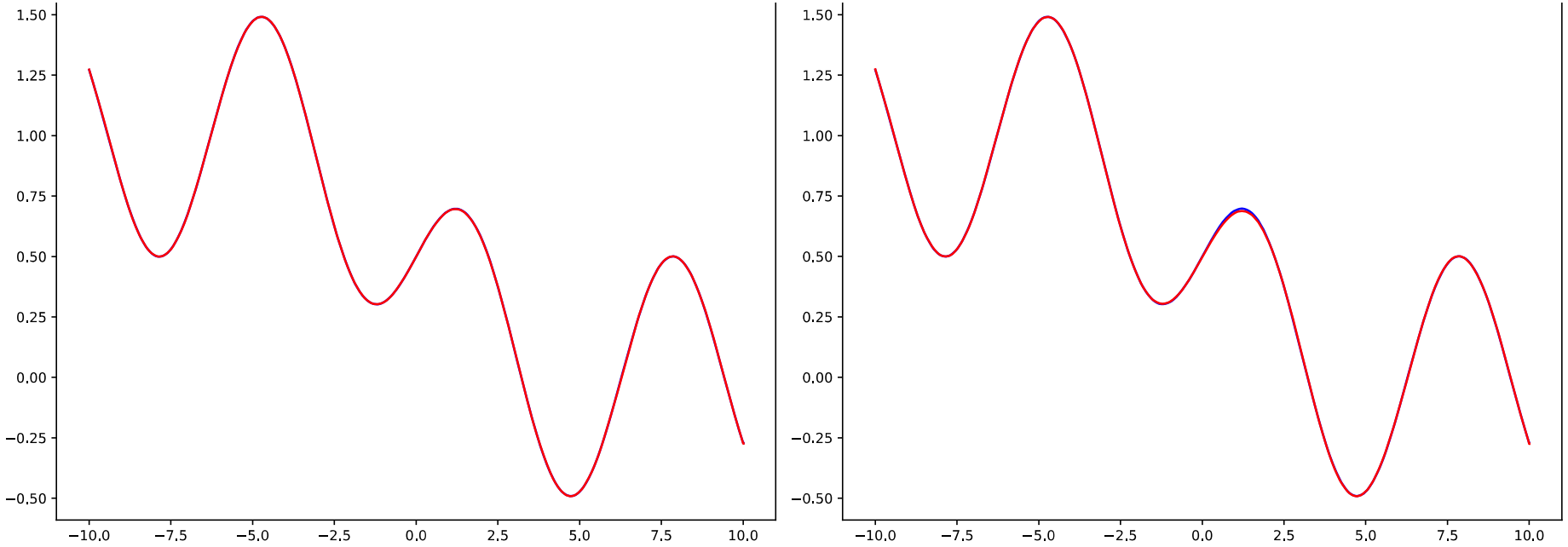

$p = 24, alpha = 0.0001$


$p = 24, alpha = 0.001$


$p = 24, alpha = 0.01$


$p = 24, alpha = 0.1$


$p = 24, alpha = 1$



In [ ]: