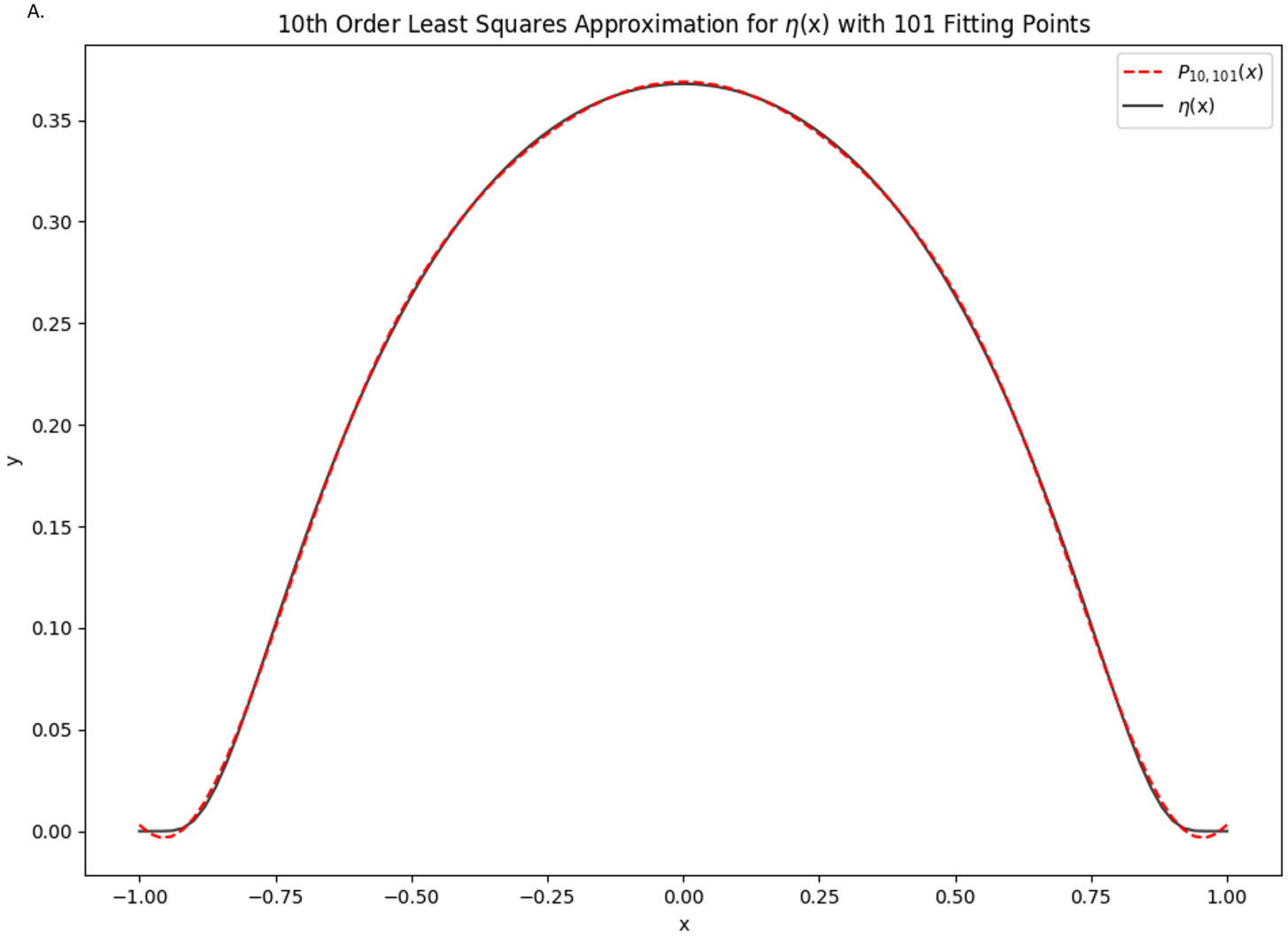
HW Problem 10 Least Squares Approximation

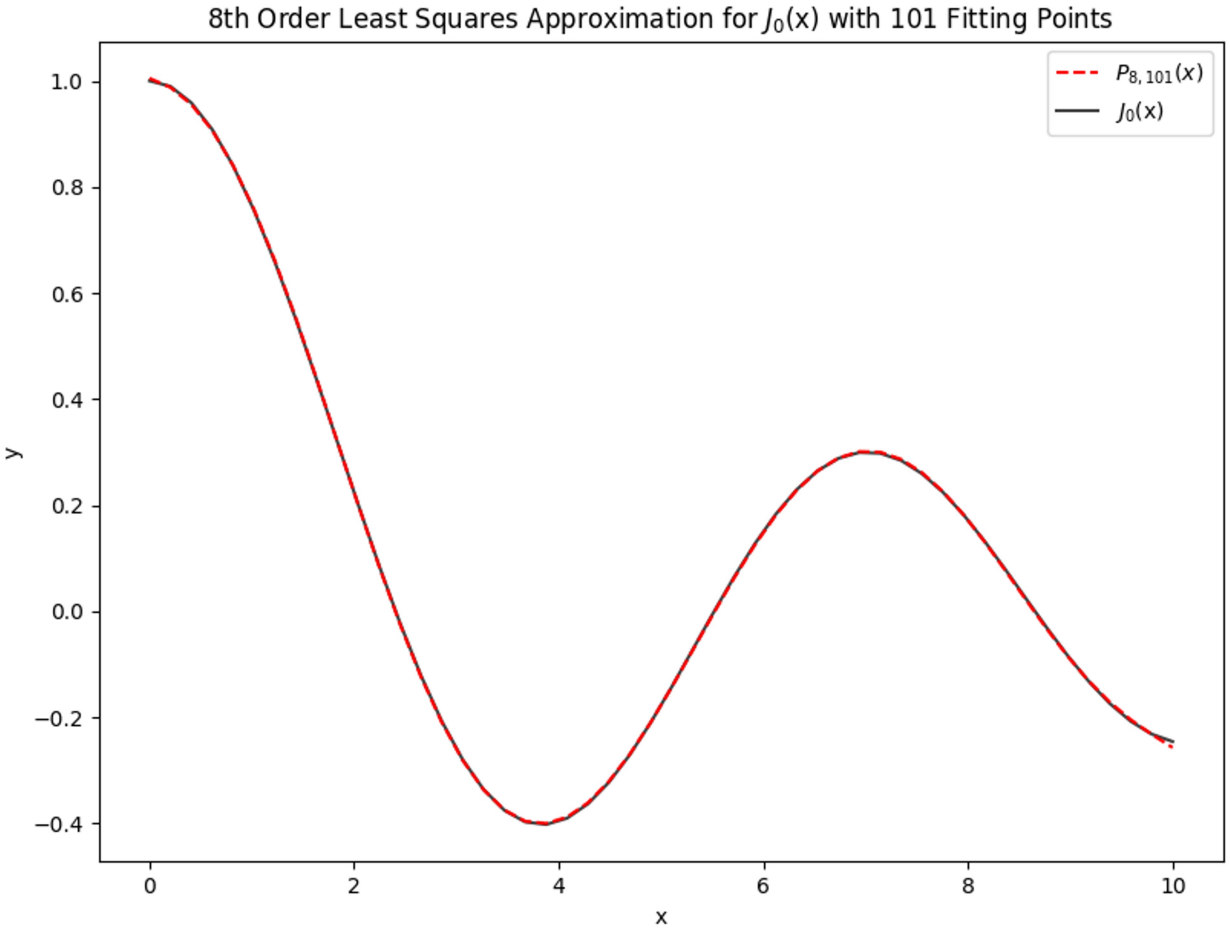
Wednesday, September 30, 2020 11:52 AM

A.



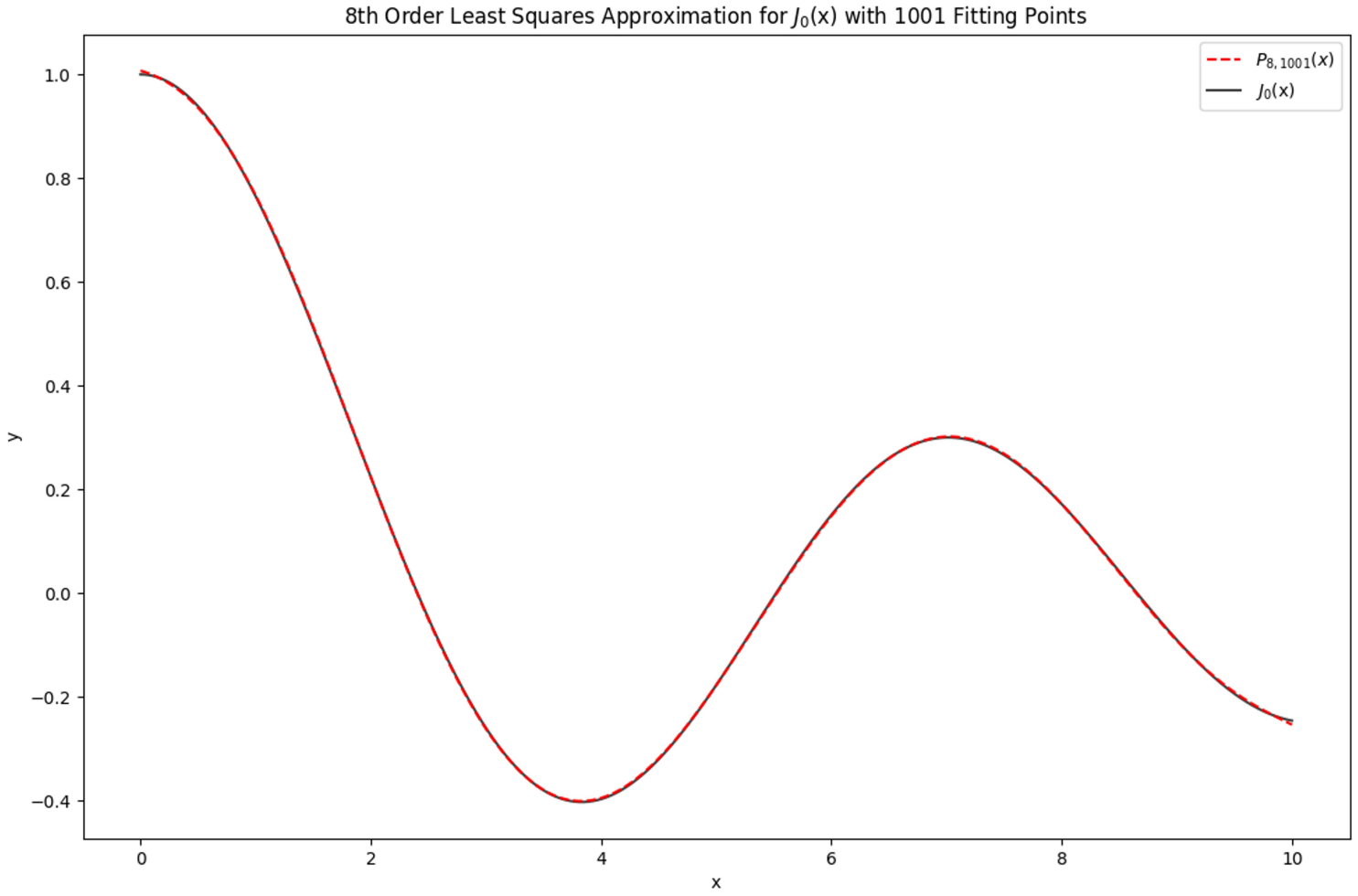
$$P_{10,101}(x) = 3.6887E^{-1}x^0 + 7.6772E^{-14}x^1 - 4.3503E^{-1}x^2 - 9.5708E^{-13}x^3 + 5.0885E^{-1}x^4 + 3.3446E^{-12}x^5 - 2.4429E^0x^6 - 4.3992E^{-12}x^7 + 3.1280E^0x^8 + 1.9442E^{-12}x^9 - 1.1247E^0x^{10}$$

B.



A =

```
[ 1.00479204e+00 -5.37479835e-02 -1.27627783e-01 -1.11268270e-01
  6.55472832e-02 -1.17057031e-02  8.64395975e-04 -2.11141331e-05
 -1.48508187e-07]
```



A =

```
[ 1.00727221e+00 -6.52522566e-02 -1.10927350e-01 -1.22430657e-01
  6.95438536e-02 -1.25204477e-02  9.59056804e-04 -2.69450677e-05
-8.49106063e-10]
```

The only difference between the plots appears to be that with more fitting points the approximation matches the end points slightly better, but the difference is very subtle.