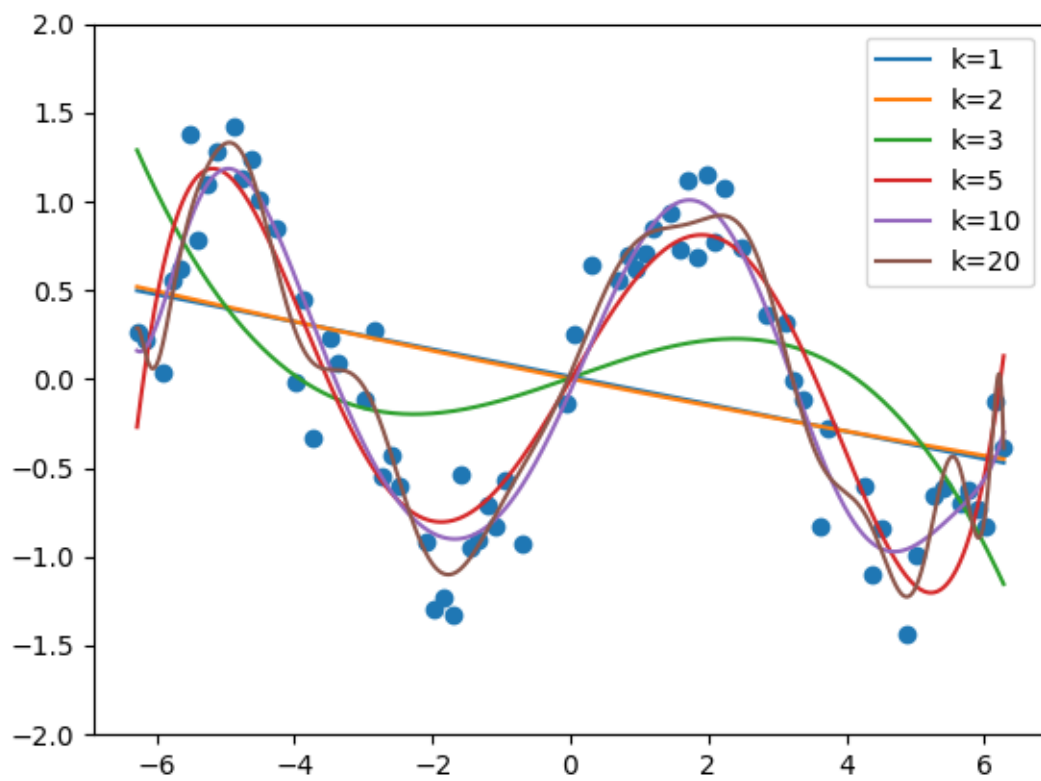**Answer:**

We see that $k = 1, 2, 3$ are all pretty terrible, by $k = 5$ we're getting decent fitting. $k = 10$ is even better, however by $k = 20$ we observe some over-fitting that you'd probably disagree with.