Pentagon numbers

Problem 44

Pentagonal numbers are generated by the formula, $P_n=n(3n−1)/2$. The first ten pentagonal numbers are:

1, 5, 12, 22, 35, 51, 70, 92, 117, 145, …

It can be seen that $P_4 + P_7 = 22 + 70 = 92 = P_8$. However, their difference, 70 − 22 = 48, is not pentagonal.

Find the pair of pentagonal numbers, P_j and P_k, for which their sum and difference are pentagonal and $D = |P_k − P_j|$ is minimised; what is the value of D?