

### Problem 3: Polynomials over $\mathbb{Z}$

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Find all polynomials  $p(x)$  with integer coefficients that satisfy

$$p(p'(x)) = p'(p(x)) \text{ for all } x \in \mathbb{R}$$

As always, show your work, fully explain and justify your answer. A solution mainly obtained by computers or calculators will not be accepted.

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Posting Date 9/20/2019. Submit solutions to Noah Aydin, Mathematics Department, RBH 319 (e-mail or hard-copy, but hard copy submissions must include a time stamp) by 5 pm on 10/4/2019.