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Some Commutativity Properties For Rings With Unity

of

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Mathematics

**Abstract:** In this paper, we prove the commutativity of a ring  $R$  with unity satisfying one of the following ring properties:  $(P_1)$  For each  $x, y$  in  $R$ ,  $\{1 - h(yx^f)\}[x, yx^f - f(yx^f)]\{1 - g(yx^f)\} = 0$  for some  $(P_2)$  Given  $x, y$  in  $R$ ,  $\{1 - h(yx^f)\}[x, yx^f - f(x^f y)]\{1 - g(yx^f)\} = 0$  and  $\{1 - \sim h(xy^f)\}[y, y^f x - \sim f(xy^f)]\{1 - \sim g(xy^f)\} = 0$  for some  $f(X), \sim f(X) \in X^2 Z[X]$  and  $g(X), \sim g(X), h(X), \sim h(X) \in XZ[X]$ .  $(P_3)$  For each  $x, y \in R$ ,  $[x, yx^f - x^s f(y)x^t] = 0$  for some  $f(X) \in X^2 Z[X]$ .

 [Keywords](#)  
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