

Quadratic Algorithm

John T. Baldwin

November 8, 2004

The seven parts were assigned 2,1,3,2,2,3,3 for a total of 16 points.

Two observations:

The simplest answer to part six was to apply the algorithm to $(ax + b)(cx + d) = acx^2 + (ac + bd)x + abcd$ (since we only expect the algorithm to work when the polynomial is in such a form). But you have to be careful to see where you use the hypothesis that ac , $ac + bd$ and $abcd$ are relatively prime.

Here is a simple proof of part 7. The roots of $a + by + cy^2$ are the reciprocals of the roots of $ax^2 + bx + c$. (Divide the second equation by x^2 and replace x by $1/y$.) Applying the quadratic formula to $a + by + cy^2$ gives the reciprocal of the answer asked for. We are done.