In-Class Assignment 7 (Due: 10/19/21)

1. Factor the polynomial $f(x) = 2x^5 - 5x^4 - 7x^3 + 8x^2 + 11x + 3$ using the techniques we discussed in class today.

(a) Use the Rational Zero Theorem to write down all possibilities for the rational zeros of $f(x)$.

(b) Use the Remainder Theorem and Synthetic Division to evaluate $f(x)$ at each possibility to determine the rational zeros. Do not use a calculator. Note: there are only three rational zeros.

(c) Divide $f(x)$ by the product of the factors found in part (b). Your quotient $q(x)$ should be a quadratic and your remainder should be zero.

(d) Factor the quadratic quotient $q(x)$ using the quadratic formula.

(e) Using parts (a)-(d), write $f(x)$ in its factored form.