FALL 2019: MATH 558 QUIZ 5

Each question is worth 5 points.

1. First define irreducible polynomial in $F[x]$ and then carefully state the uniqueness property we proved concerning writing a polynomial as a product of irreducible polynomials.

Solution. $f(x)$ is irreducible if, $f(x)$ cannot be written as a product $f(x) = a(x)b(x)$, with $\text{degree}(a(x)) < \text{degree}(f(x))$ and $\text{degree}(b(x)) < \text{degree}(f(x))$.

2. Mark each statement as True or False:
   (a) Every irreducible polynomial is a monic polynomial. False
   (b) Every monic polynomial is an irreducible polynomial. False
   (c) The greatest common divisor of two non-zero polynomials in $F[x]$ is a monic polynomial. Ture
   (d) The greatest common divisor of two non-zero polynomials in $F[x]$ is divisible by every common divisor of those two polynomials. True
   (e) In $F[x]$, if $f(x)$ divides $g(x)h(x)$, then $f(x)$ divides $g(x)$ or $f(x)$ divides $h(x)$. False