

1. Ex. 4.5 # 2(a)&(b) only, 8(i)(iii)(v)(vii), 15, 26(b).
2. Prove that if p and $p + 2$ are both primes with $p > 3$ then $6|p + 1$ (use Division Algorithm and check all cases of $3q + r$).
3. Prove that if $2^n - 1$ is prime then n is prime (by contrapositive).
Hint: $x^k - y^k = (x - y)(x^{k-1} + x^{k-2}y + \dots + x^2y^{k-3} + xy^{k-2} + y^{k-1})$
4. Prove that for any positive integer k , there exists a sequence of k consecutive composite numbers (by construction).
5. Prove that if a , b , c and m are integers such that $m \geq 2$, $c > 0$ and $a \equiv b \pmod{m}$ then $ac \equiv bc \pmod{m}$.
6. Ex. 14.3 # 32, 38(c)