1a) divisible by 4 since the last 2 digits, 36, is a number divisible by 4
not divisible by 5, since it ends in 6
not divisible by 8, since the last 3 digits, 236, divided by 8 is 29 remainder 4
not divisible by 9, since the sum of the digits is 20, which is not divisible by 9
divisible by 11, since the sum of odd-place digits (10) minus the sum of even-place digits (10) equals 0, which is divisible by 11… 0 = 0 * 11
not divisible by 12, since it is not divisible by 3

1b) divisible by 4, since the last 2 digits, 52, is a number divisible by 4
not divisible by 5, since it ends in 2
divisible by 8, since the last 3 digits, 352 is divisible by 8
divisible by 9, since the sum of the digits is 36, which is divisible by 9
not divisible by 11, since the sum of the even-place digits (22) minus odd-place digits (14) is 8, which is not divisible by 11
divisible by 12, since it is divisible by 3 and 4

1c) not divisible by 4, since it is not divisible by 2
not divisible by 5, since it ends in 1
not divisible by 8, since it is not divisible by 2
not divisible by 9, since the sum of the digits is 25, which is not divisible by 9
not divisible by 11, since the sum of the odd-place digits (13) minus even-place digits (12) is 1, which is not divisible by 11
not divisible by 12, since it is not divisible by 3 and not divisible by 4

1d) not divisible by 4, since the last 2 digits, 50, is a number that is not divisible by 4
divisible by 5, since it ends in 0
not divisible by 8, since it is not divisible by 4
not divisible by 9, since the sum of the digits is 23, which is not divisible by 9
not divisible by 11, since the sum of the even-place digits (14) minus odd-place digits (9) is 5, which is not divisible by 11
not divisible by 12, since it is not divisible by 3 and not divisible by 4

2a) The square root of 113 is about 10, so we check primes up to 10
Not divisible by 2, since it ends in 3
Not divisible by 3, since the sum of the digits is 5, which is not divisible by 3
Not divisible by 5, since it ends in 3
Not divisible by 7, we just check it: 113 divided by 7 is 16 remainder 1
Prime

b) Not prime, divisible by 3, sum of digits is 9, which is divisible by 3

c) Not prime, divisible by 7, we just check, 287 = 7 * 41

d) Not prime, divisible by 17, we just check 289 = 17 * 17

e) The square root of 293 is about 17, so we check primes up to 17
Not divisible by 2, since it ends in 3
Not divisible by 3, since the sum of digits is 14, which is not divisible by 3
Not divisible by 5, since it ends in 3
Not divisible by 7, we just check, 293 divided by 7 is 41 remainder 6
Not divisible by 11, the even-place digit (9) minus the sum of the odd-place digits (5) is 4, which is not divisible by 11
Not divisible by 13, we just check, 293 divided by 13 is 22 remainder 7
Not divisible by 17, we just check, 293 divided by 17 is 17 remainder 4
Prime