1

Gcd(41, 131)

131 = 3 x 41 + 8

41 = 5 x 8 + 1

8 = 8 x 1 + 0

Gcd(41, 131) = 1

Gcd = 41x + 131y = 1

1= 41 – 5x8

1 = 41 – 5x(131 – 3x41) = 16x41 – 5x131

16x41 = 1 mod 131

Inverse = 16

B

41x = 9 mod 131

X = 16x9 = 144

2

$3^{100} = 1$ mod 101

$(3^{100})^{14} = 1^{14}$ mod 101

$3^{1400} = 1$ =mod 101

3^{1400} x $3^3 = 1$ x 3^3 mod 101

$3^{1403} = 3^3$ mod 101 = 27

3

1^2 = 1

2^2 = 0

3^2 = 1

4^2 = 0

5^2 = 1

Squares are 1 and 0

B

If a is even:

Even x even = even

Even mod 2 = 0

If a is odd

Odd x odd = odd

Odd mod 2 = 1