1. 269=35\*7+24，

35=24\*1+11

24=11\*2+2

11=2\*5+1

2=1\*2+0

So the gcd(269,35)=1

1=11-2\*5

1=11-(24-11\*2)\*5

=11\*11-5\*24

=11\*(35-24\*1)-5\*24

=11\*35-16\*24

=11\*35-16\*(269-35\*7)

=11\*35-16\*269+112\*35

=123\*35-16\*269

So x=-16 and y=123.

1. The algorithms is correct, since it is beginning with the biggest possible number and try each option, so it will eventually find the correct gcd. But it is not efficient, since it is an exponential cost algorithms, say the value of the number is x, it has n bits, the cost will be O(x)=O(2^n)
2. The algorithms is correct, it is basically doing Euclidean algorithm, and it is efficient, the only difference between Euclidean and this is Euclidean do a/b, but this do a-b until a<b, a/b takes (loga)^2, and the remainder sequence will be at most 2\*loga long, since r<a/2 (a=q\*b+r),

In this way this algorithm will be polynomial time.