# 1

1. The base of is smaller than or equal to the base of .
2. There is an integer .
3. There is an integer .
4. Co-prime.

# 2

1. is the best estimate.

Reason: are constants, and will not be the dominating terms.

1. is the best estimate.

Reason: Similar to previous problem. is a function of , there is no x term, and = a product of some constants here. Therefore,

# 3

If

Then

Therefore,

If

Then

Also, if

Then

Since .

# 4

If

Then

Similarly,

If

Then

, so

This statement is false because .

A counterexample shows that 1 since

# 5

Let be digits of .

Also,

Thus,

Since is the sum of the digits, are also multiple of 9. (Premise)

Thus, is .

# 6

The .

The Euklidian steps are as follows:

1. 847 divided by 161 gives quotient 5 and remainder 42, since .
2. 161 divided by 42 gives quotient 3 and remainder 35, since
3. 42 divided by 35 gives quotient 1 and remainder 7, since .
4. 35 divided 7 gives quotient 5 and remainder 0, since .

The algorithm stops when the remainder = 0.