Now that we have covered some variations that arise in inequalities in GMAT problems, let's look at some questions to consolidate the learning.

We will first take up a relatively easy OG question and then a relatively tougher question which looks harder than it is because of the use of mods in the options (even though, we don't really need to deal with the mods at all).

Question 1: Is n between 0 and 1?

Statement 1: n^2 is less than n

Statement 2: n^3 is greater than 0

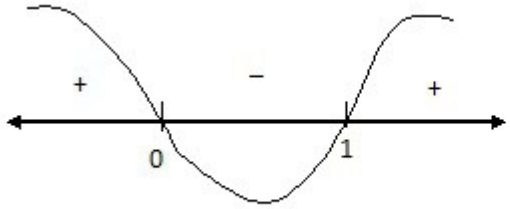
Solution: Let's take each statement at a time and see what it implies.

Statement 1: n^2 < n

n^2 – n < 0

n(n – 1) < 0

This is the required form of the expression. We can now put it on the number line.



For the expression to be negative, n should be between 0 and 1. So we can answer the question with a 'yes'. Statement 1 alone is sufficient.

Statement 2: n^3 > 0

This only implies that n > 0 and we do not know whether it is less than 1 or not. Hence this statement alone is not sufficient.

Answer: (A)

This question could have been easily solved in a minute if you understand the theory we have been discussing for the past few weeks. Let's go on to the trickier question now.

Question 2: Which of the following represents the complete range of x over which x^5 – 4x^7 < 0?

(A) 0 < |x| < ½

(B) |x| > ½

(C) –½ < x < 0 or ½ < x

(D) x < –½ or 0 < x < ½

(E) x < –½ or x > 0

Solution: As I said, it looks harder than it is. We can easily do this in a minute too. First, let's look at the given inequality closely: x^5 – 4x^7 < 0

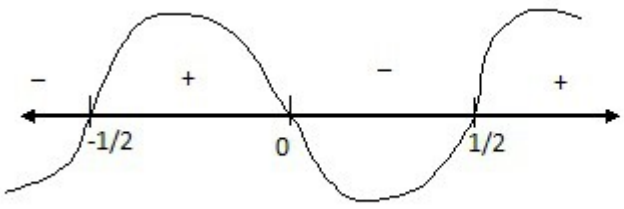
x^5 (1 – 4x^2) < 0 (taking x^5 common)

Just to make things easier right away, take out 4 common and multiply both sides by -1 to get

4(x^5)(x^2 – 1/4) > 0 (notice that the sign has flipped since we multiplied both sides by -1)

4(x^5)(x – ½)(x + ½) > 0

Think of the points you are going to plot: 0, 1/2 and -1/2. Recall that any positive odd power can be treated as a power of 1.



In which region is x positive? -1/2 < x < 0 or x > 1/2.
This is our option (C).
A quick word on the other options: What does 0 < |x| < ½ imply? It implies that distance of x from 0 is less than ½. So x lies between -1/2 and 1/2 (but x cannot be 0).
What does |x| > ½ imply? It implies that distance of x from 0 is more than ½. So x is either greater than ½ or less than -1/2.
If you are wondering what I am talking about, check out an old QWQW post:http://www.veritasprep.com/blog/2011/01/quarter-wit-quarter-wisdom-do-what-dumbledore-did/
We have discussed how to deal with modulus here. We hope this discussion has made such questions easier for you!