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TRUE (or) FALSE

Small – *o* Notation:

Let *f* and *g* be functions $f,g:N\to R^{+}$ say that $f(n)=O(g(n))$ if for any real number

c > 0,a number n_0 exists, where *f(n)* < *c* . *g(n)* for all $n\geq n_0$.

(a)

False.

The statement $n=o(2n)$ is invalid, because the functions *n* and 2*n* grows equality

That is $f(n)=c\cdot g(n)$.But according to definition $f(n)<c\cdot g(n)$

Therefore $n=o(2n)$ is false

(b)

True.

The statement $2n=o(n^2)$ is valid, because the functions $n^2=n\cdot n$ which will grow faster than *n*. That is $f(n)<g(n)$.

Therefore from the definition of small – *o* notation, $2n=o(n^2)$ is true.

(c)

True.

The statement $2^n=o(3^n)$ is valid, because the function 2^n runs shower than

the function 3^n .

Then, $2^n<3^n$.

That is $f(n)<c\cdot g(n)$

Hence from the definition of small – *o* notation, $2^n=o(3^n)$ is true.

(d)

True.

The statement $1=o(n)$ is valid, because the function *n* grows faster than a number 1.

Therefore $f(n)<c\cdot g(n)$

By the definition of small – *o* notation, $1=o(n)$ is true.

(e)

False.

The statement $n=o(\log n)$ is not valid, because the functions $\log n$ grows slower than the function *n* , which is a contradiction.

Hence $n=o(\log n)$ is false.

(f)

False.

The statement $1 = o(1/n)$ is not valid, because the function $1/n$ grows slower than 1.

Therefore $f(n) > g(n)$.

Which is a contradiction

Hence $1 = o(1/n)$ is false .