Subject:.................... No:.................... Date:

Quiz 3 (Answer)

1) $P(n): 1+3+5+\ldots+(2n-1)=n^2$

a) $P(1): 1+3+5+\ldots+2(1)-1=1^2$

$P(1): 2(1)-1=1^2$

$2-1=1^2$

$1=1$

The basis step completed and shows the P(1) is true.

b) Inductive hypothesis

$P(n): 1+3+5+\ldots+(2n-1)=n^2$

$\rightarrow$ $P(k): 1+3+5+\ldots+(2k-1)=k^2$

c) $P(k+1): 1+3+5\ldots+(2k-1)=k^2$

$P(k+1): 1+3+5\ldots+(2k-1)+[2(k+1)-1]=k^2+[2(k+1)-1]$

$=k^2+2k+2-1$

$=k^2+2k+1$

$=(k+1)^2$

Both basis step and inductive step completed. So, by the principle of mathematical induction, the statement is true for every positive integer n.

2. $f(0)=2$

$f(n+1)=3f(n)-2[3-f(n)]$

$n=1,2,3$

a) $f(1)$

$f(0)+1=3f(0)-2[3-f(0)]$

$f(1)=3(2)-2(3-2)$

$=6-2(1)$

$=4$

b) $f(2)$

$f(1+1)=3f(1)-2[3-f(1)]$

$f(2)=3(4)-2[3-4]$

$=12+2$

$=14$

checked 4/10/18