

1. Buktikan  $3^{2n} + 22n + 2$  habis dibagi 5.

$$3^{2 \times 1} + 2^{2 \times 1 + 2} = 9 + 16 = 25, \rightarrow \frac{25}{5} = 5.$$

jadi jika  $n=1$  maka hasilnya adalah 25 dan habis dibagi 5.

( $\Rightarrow$ )  $n=k \Rightarrow n=k+1$

$$3^{2(k+1)} + 2^{2(k+1)+2}$$

$$= 3^{2k+2} + 2^{2k+2+2}$$

$$= 3^{2k} \times 3^2 + 2^{2k+2} \times 4.$$

$$= 9 \times 3^{2k} + 2^{2k+2}$$

$$= 5 \times 3^{2k} + 4 \times 3^{2k} + 4 \times 2^{2k+2}$$

$$= 5 \times 3^{2k} + 4(3^{2k} + 2^{2k+2})$$

karena diandaikan jika  $n=k$  maka

$$3^{2k} + 2^{2k+2} \text{ habis dibagi } 5$$

sehingga kelipatannya  $4(3^{2k} + 2^{2k+2})$

juga habis dibagi 5.

2.  $5^{(2n)^2 n^0} + (3n-1)^{2/2}$  habis dibagi 9

( $\Rightarrow$ )  $5^2 + 3-1$  (=) disederhanakan.

( $\Rightarrow$ )  $5^2 + 3-1 = 27$ ,  $27 : 9 = 3$

A jika  $n=k+1$

( $\Rightarrow$ )  $5^{2(k+1)} + 3(k+1)-1$

( $\Rightarrow$ )  $5^{2k} 5^2 + 3k + 3-1$

( $\Rightarrow$ )  $25 \cdot 5^{2k} + 3k - 1 + 3$

( $\Rightarrow$ )  $24 \cdot 5^{2k} + 5^{2k} + 3k - 1 + 3$

( $\Rightarrow$ )  $5^{2k} + 3k - 1 + 3 + 24 \cdot 5^{2k}$

( $\Rightarrow$ )  $9m + 3 + 24 \cdot 5^{2k}$

jika  $3 + 24 \cdot 5^{2k}$  habis dibagi 9 -  
dibuktikan dengan  $n=1$

( $\Rightarrow$ )  $3 + 24 \cdot 5^2 = 603$

$$\frac{603}{9} = 67$$