4.3

~~9) For all INT n and d, d ∤ n if and only if~~

4) Does 3 divide $(3k+1)(3k+2)(3k+3)$

yes; $(3k+1)(3k+2)(3)(k+1)$

$= 3(3k+1)(3k+2)(k+1)$

$\therefore$ 3 ÷s $(3k+1)(3k+2)(3k+3)$

By definition of divisibility

15) Prove From def. of divisibility

For all INT a, b, and c

if $a|b$ and $a|c$ then $a|(b+c)$

Let a, b, c be particular but arbitrary INT

We are given that $a|b$ and $a|c$.

We must show $a|(b+c)$

25) For all INT a, b, c if a is a factor of c then ab is a factor of c

false; counter ex: $a=3, b=7, c=9$

42) A) 6! in standard factored form

$6! = 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1$

$= 2 \cdot 3 \cdot 5 \cdot 2 \cdot 2 \cdot 3 \cdot 2 \cdot 1$

$= 2^4 \cdot 3^2 \cdot 5$