④ Ex 4.1 Problem 30

T.P.:- for all integers m, if m is even then $3m+5$ is odd.

Let $m = 2k$

$\therefore 3m+5 = 3(2k)+5$

$= 6k+5$

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

let $3k+2 = k'$

$= 2k'+1$

$=$ odd — by definition.

⑤ Ex 4.1. Problem 36

Prove Statement is false

T.P.:- There exists an integer n such that $6n^2+27$ is prime.

Proof:- $6n^2+27$

$= 3(2n^2+9)$

Prime no. is only ÷ by 1 & no. itself

Thus if $6n^2+27 = 3$ then only it can be prime

but $6n^2+27 > 3$.

$\therefore$ False

⑥ Ex. 4.2 Problem 7

write as a ratio of integers. ~~x~~ $52.46\overline{7216}$

$52.46\overline{7216} = \frac{x+524}{10}$ — ①

$524.6\overline{7216} = x+524$

$\therefore x = 0.6\overline{7216}$

& $10000x = 6721.6721\ldots$

$x = 0.6721$

$\therefore 9999x = 6721.0000$

$\therefore x = \frac{6721}{9999}$

$\therefore$ ① becomes, $\frac{x+524}{10} = 52.467216 = \frac{6721/9999+524}{10} = \frac{524\,6197}{99990}$