

a) if odd ; $n=2\alpha+1$

$a, b = \text{odd}$

$$a = 2x+1$$

$$b = 2y+1$$

ab

$$(2x+1)(2y+1)$$

$$2xy + 2x + 2y + 1$$

$$\text{if ; } x=1$$

$$y=2$$

$$\therefore = 11$$

$$\text{if ; } x=2$$

$$y=1$$

$$\therefore = 11$$

$$\text{if ; } x=2$$

$$y=2$$

$$\therefore = 17$$

$$\text{if ; } x=1$$

$$y=1$$

$$\therefore = 7$$

b) suppose a/b and a/c for any int m, n

$$b = ma$$

$$c = na$$

$$b+c ; ma+na$$

$$= a(m+n) \rightarrow a|(b+c)$$

$$c) n^2 - 3n + 9$$

$$\text{if } n=1 (\text{odd})$$

$$(1)^2 - 3(1) + 9$$

$$= 1 - 3 + 9$$

$$= 7 (\text{odd})$$

$$\text{if } n=2 (\text{even})$$

$$(2)^2 - 3(2) + 9$$

$$= 4 - 6 + 9$$

$$= 7 (\text{odd})$$

d) Let x & y = rational number

$$x = \frac{a}{b}; b \neq 0, a \in \mathbb{Z}$$

$$y = \frac{c}{d}; d \neq 0, c \in \mathbb{Z}$$

$$x + y = \frac{a}{b} + \frac{c}{d}$$

$$= \frac{ad + cb}{bd}$$

$$ad + cb \in \mathbb{Z}$$