#25. @ a.r.o.c $= \frac{f(4)-f(-2)}{4-(-2)} = \frac{257-17}{6} = \frac{240}{6} = 40$

(b) a.r.o.c $= \frac{f(x+h)-f(x)}{h} = \frac{[(x+h)^4+1]-[x^4+1]}{h}$

$= \frac{x^4+4x^3h+6x^2h^2+4xh^3+h^4+1-x^4-1}{h}$

$= \frac{h[4x^3+6x^2h+4xh^2+h^3]}{h}$

Pascal's triangle:

1
1 1
1 2 1
1 3 3 1
1 4 6 4 1

$\xrightarrow[\text{as } h\to 0]{}$ i.r.o.c $= 4x^3+6x^2(0)+4x(0)^2+0^3$

$= 4x^3$

$\therefore$ i.r.o.c at $x=3$

$= 4(3)^3$

$= 108$