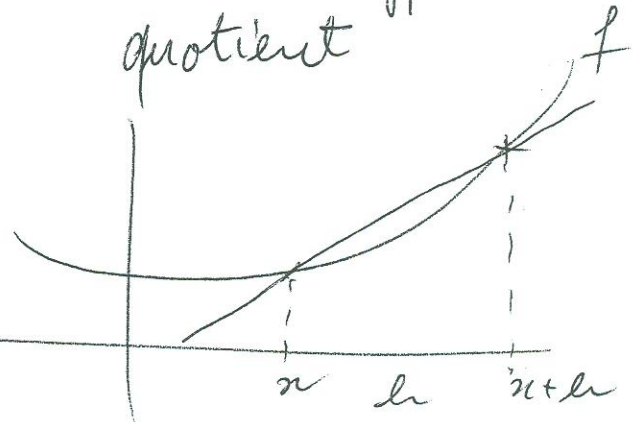


Difference Quotient.

Let f be a function, x , $h \neq 0$

$\frac{f(x+h) - f(x)}{h}$ is called the difference quotient

It represents the slope of the line passing by $(x, f(x))$ & $(x+h, f(x+h))$ on the graph.



Exp Find the difference quotient for

a) $f(x) = x^2 - 4x + 2$ b) $g(x) = 1 - x^2$

$$\begin{aligned} \text{b) } \frac{g(x+h) - g(x)}{h} &= \frac{(1 - (x+h)^2) - (1 - x^2)}{h} \\ &= \frac{1 - x^2 - 2xh - h^2 - 1 + x^2}{h} = \frac{h(-2x - h)}{h} \\ &= \boxed{-2x - h} \end{aligned}$$