Remember that one version of the difference quotient for $f(x)$ at $x = a$ is

$$\frac{f(a+h) - f(a)}{h}$$

1. Let $f(x) = x^2$
   (a) Use the limit of the difference quotient to find the instantaneous velocity of $f(x)$ at $x = 2$
   (b) Repeat (a) at $x = 4$
   (c) Repeat (a) at $x = -3$
   (d) Look at a graph of $y = f(x)$. Do your answers seem plausible?
   (e) Repeat (a) at an arbitrary point $x = a$

2. Repeat #1 with $f(x) = x^3$