

$$B(t) = t^3 + t^2 + 2$$

$$a^3 - b^3 = (a-b)(a^2 + ab + b^2)$$

$$\lim_{h \rightarrow 0} \frac{B(t+h) - B(t)}{h}$$

$$(t+h)^2 - t^2$$

$$= \lim_{h \rightarrow 0} \frac{(t+h)^3 + (t+h)^2 + 2 - [t^3 + t^2 + 2]}{h}$$

$$= \lim_{h \rightarrow 0} \frac{(\cancel{t+h} - \cancel{t})((t+h)^2 + (t+h)t + t^2) + (\cancel{t+h} - \cancel{t})(t+h+t)}{h}$$

$$= \lim_{h \rightarrow 0} \frac{h[(t+h)^2 + (t+h)t + t^2] + (t+h+t)h}{h}$$

$$= (t^2 + t^2 + t^2) + 2t = 3t^2 + 2t$$

LT01 Soru 8:

$$L(t) = t^3 - 2t^2$$

$$\lim_{h \rightarrow 0} \frac{L(t+h) - L(t)}{h}$$

$$= \lim_{h \rightarrow 0} \frac{(t+h)^3 - 2(t+h)^2 - [t^3 - 2t^2]}{h}$$

$$= \lim_{h \rightarrow 0} \frac{\cancel{t^3} + 3t^2h + 3th^2 + h^3 - 2\cancel{t^2} - 4th - 2h^2 - \cancel{t^3} + 2\cancel{t^2}}{h}$$

$$= \lim_{h \rightarrow 0} \frac{h(3t^2 + 3t + h - 4t - 2h)}{h} = 3t^2 - 4t$$