• Combinando el TFC con la regla de la cadena:

$$G(x) := \int_{v(x)}^{u(x)} f(t)\,dt \qquad \text{(Pág. 33)}$$

$$\boxed{G'(x) = f(u(x))\,u'(x) - f(v(x))\,v'(x)}$$

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① $$\lim_{x\to 0} \frac{\int_0^x \operatorname{sen}^2(t)\,dt}{x^3} = \left[\frac{0}{0}\right] = \leftarrow \text{L'Hôpital}$$

$$\lim_{x\to 0} \frac{\operatorname{sen}^2(x)\cdot 1 - \operatorname{sen}^2(0)\cdot 0}{3x^{2}} =$$

$$\lim_{x\to 0} \frac{\operatorname{sen}^2(x)}{3x^{\cancel{3}2}} = \lim_{x\to 0} \frac{2\,\overset{\text{sen}}{\cancel{\cos}}(x)\cos(x)}{6x^{\cancel{2}}} =$$

$$\lim_{x\to 0} \frac{2\cdot\left[\cos^2(x) - \operatorname{sen}^2(x)\right]}{6\cancel{x^{2}}} = \frac{2}{6} = \frac{1}{3}$$

(2)

$$\lim_{x\to 0} \frac{\int_0^{x^2} e^{\text{sen}(t)}\,dt}{x^2} = \left[\frac{0}{0}\right] \overset{\text{L'Hôpital}}{=}$$

$$= \lim_{x\to 0} \frac{\cancel{2x}\cdot e^{\text{sen}(x^2)}}{\cancel{2x}} = e^0 = 1$$

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