1) a) $\int \left(2x - 3\operatorname{sen}(2x) - \frac{3}{5x} + 4\cos(5x) + 1\right) dx$

$$\frac{2x^2}{2} + \frac{3}{2}\cos(2x) - \frac{3\ln x}{5} + \frac{4}{5}\operatorname{sen}(5x) + x + C$$

b) $\int_0^2 (2x^2 - x^3 - x)\,dx$

$$\frac{2x^3}{3} - \frac{x^4}{4} - \frac{x^2}{2}$$

$$\frac{2 \cdot 2^3}{3} - \frac{2^4}{4} - \frac{2^2}{2}$$

$$\frac{2 \cdot 8}{3} - \frac{16}{4} - \frac{4}{2}$$

$$\frac{16}{3} - \frac{16}{4} - \frac{4}{2} - \left(\frac{0}{3} - \frac{0}{4} - \frac{0}{2}\right)$$

$$\frac{16}{3} - \frac{16}{4} - \frac{4}{2}$$

$$\frac{64 - 48 - 24}{12} = \frac{-8}{12}$$

$$\boxed{\frac{-8}{12}}$$

2)

x_i	-1	0	1
	2	-1	3

$x_0 = -1$

$x_1 = 0$

$x_2 = 1$

l_0^2 $\quad$ l_1^2 $\quad$ l_2^2

$$\frac{(x-x_1)(x-x_2)}{(x_0-x_1)(x_0-x_2)} \qquad \frac{(x-x_0)(x-x_2)}{(x_1-x_0)(x_1-x_2)} \qquad \frac{(x-x_0)(x-x_1)}{(x_2-x_0)(x_2-x_1)}$$

$$\frac{(x)(x-1)}{(-1)(-2)} \qquad \frac{(x+1)(x-1)}{(0+1)(-1)} \qquad \frac{(x+1)(x)}{(2)(1)}$$

$$\frac{x^2-x}{2} \qquad x^2+x-x-1 \qquad \frac{x^2+x}{2}$$

$$\frac{x^2-1}{-1}$$

$$2\left(\frac{x^2-x}{2}\right)+\left(-1\left(\frac{x^2-1}{-1}\right)\right)+3\left(\frac{x^2+x}{2}\right)$$

$$x^2-x+x^2-1+\frac{3x^2+3x}{2}$$

$$\frac{2x^2-2x+2x^2-2+3x^2+3x}{2}$$

$$\frac{7x^2+x-2}{2}$$

3) No WOLFRAM encontrei graficamente intervalo entre 0 e 1.

Achei intervalo com amplitude 0.1 entre 0.5 e 0.6

$$I = [0.5; 0.6]$$

$$f(x) = 3\,sen(x) - \frac{1}{x}$$

$$f'(x) = 3\cos(x) + \frac{1}{x^2}$$

Tentando na calculadora:

$x_0 = 0.5500$

$x_1 = 0.5926$

$x_2 = 0.5948$

$x_3 = 0.5948$ } Repetiu as 4 casas

$x_4 = 0.5948$

Resposta = 0.5948

4) $\int_0^{0.6} \frac{x}{(3+x)^2}\,dx$ 6 PONTOS

$h = \frac{0.6}{5} = 0.12$

X_0	X_1	X_2	X_3	X_4	X_5
0	0.12	0.24	0.36	0.48	0.6
$f(x)$ 0	0.042	0.022	0.031	0.039	0.046

$E = 0 + 0.046 = 0.046$

$P = 0.022 + 0.039 = 0.061$

$I = 0.042 + 0.031 = 0.043$

$0.12(0.023 + 0.061 + 0.043)$

0.0152