$x = \frac{t + 4.\overline{3}}{3.\overline{3}}$

redo 4.7

2b) $\int_1^{1.6} \frac{2x}{x^2-4}\,dx \longrightarrow \int_{-1}^{1} \underbrace{\left[2\left(\frac{t+4.\overline{3}}{3.\overline{3}}\right) \Big/ \left(\left(\frac{t+4.\overline{3}}{3.\overline{3}}\right)^2 - 4\right)\right]}_{g(t)} \frac{1}{3.\overline{3}}\,dt$

$(1.6,1)(1,-1)$ $\quad t = 3.\overline{3}x + b$ $\quad t = 3.\overline{3}x - 4.\overline{3}$

$\frac{2}{.6} = 3.\overline{3}$ $\quad -1 = 3.\overline{3}(1) + b$

$-4.\overline{3} = b$ $\quad dt = 3.\overline{3}\,dx$

$\frac{1}{3.\overline{3}}dt = dx$

$n=2$

$\approx g(.5773502692) + g(-.5773502692)$

$\approx -.7307$

actual value: $-0.72397$

4) repeat with $n=3$

so

$\approx .\overline{5}\,g(.7745966692) + .\overline{8}\,g(0) + .\overline{5}\,g(-.7745966692)$

$\approx -.7338$

11) $\int_{-1}^{1} f(x)\,dx = af(-1) + bf(1) + cf'(-1) + df'(1)$

degree of precision 3: $2n-1=3$ $\quad n=2$

$\int_{-1}^{1} 1\,dx = x\Big]_{-1}^{1} = 2 = a + b + 0 + 0$

$\int_{-1}^{1} x = \frac{1}{2}x^2\Big]_{-1}^{1} = 0 = -a + b + c + d$

$\int_{-1}^{1} x^2 = \frac{1}{3}x^3\Big]_{-1}^{1} = \frac{2}{3} = a + b - 2c + 2d$

$\int_{-1}^{1} x^3 = \frac{1}{4}x^4\Big]_{-1}^{1} = 0 = -a + b + 3c + 3d$

$\frac{2}{3} + 2 + 2c + 2d$

$2 + c + d$

$2 = a+b$

$0 = -a+b+c+d$

$\frac{2}{3} = a+b-2c+2d$

$0 = -a+b+3c+3d$

$f(x) = 1$
$f(x) = x$
$f(x) = x^2$
$f(x) = x^3$

$$\left[\begin{array}{cccc|c} 1 & 1 & 0 & 0 & 2 \\ -1 & 1 & 1 & 1 & 0 \\ 1 & 1 & -2 & 2 & 2/3 \\ -1 & 1 & 3 & 3 & 0 \end{array}\right] \rightarrow \left[\begin{array}{cccc|c} 1 & 1 & 0 & 0 & 2 \\ 0 & 2 & 1 & 1 & 2 \\ 0 & 0 & 2 & -2 & -4/3 \\ 0 & 2 & 3 & 3 & 2 \end{array}\right] \rightarrow \left[\begin{array}{cccc|c} 1 & 1 & 0 & 0 & 2 \\ 0 & 2 & 1 & 1 & 2 \\ 0 & 0 & 2 & -2 & -4/3 \\ 0 & 0 & 2 & 2 & 0 \end{array}\right]$$

$$\rightarrow \left[\begin{array}{cccc|c} 1 & 1 & 0 & 0 & 2 \\ 0 & 2 & 1 & 1 & 2 \\ 0 & 0 & 2 & -2 & -4/3 \\ 0 & 0 & 0 & 4 & 4/3 \end{array}\right] \rightarrow$$

$4d = 4/3$ $\quad$ $2c - \frac{2}{3} = -4/3$

$\boxed{d = 1/3}$ $\quad$ $\boxed{c = -1/3}$

$2b + 1/3 - 1/3 = 2$

$\boxed{b = 1}$ $\quad$ $\boxed{a = 1}$