> #Krasovskii Vladislav(var1)

> #1

> $P := n \rightarrow \frac{2\,n}{n+1} \cdot \frac{1}{\left(3\,x^2+4\,x+2\right)^n}$:

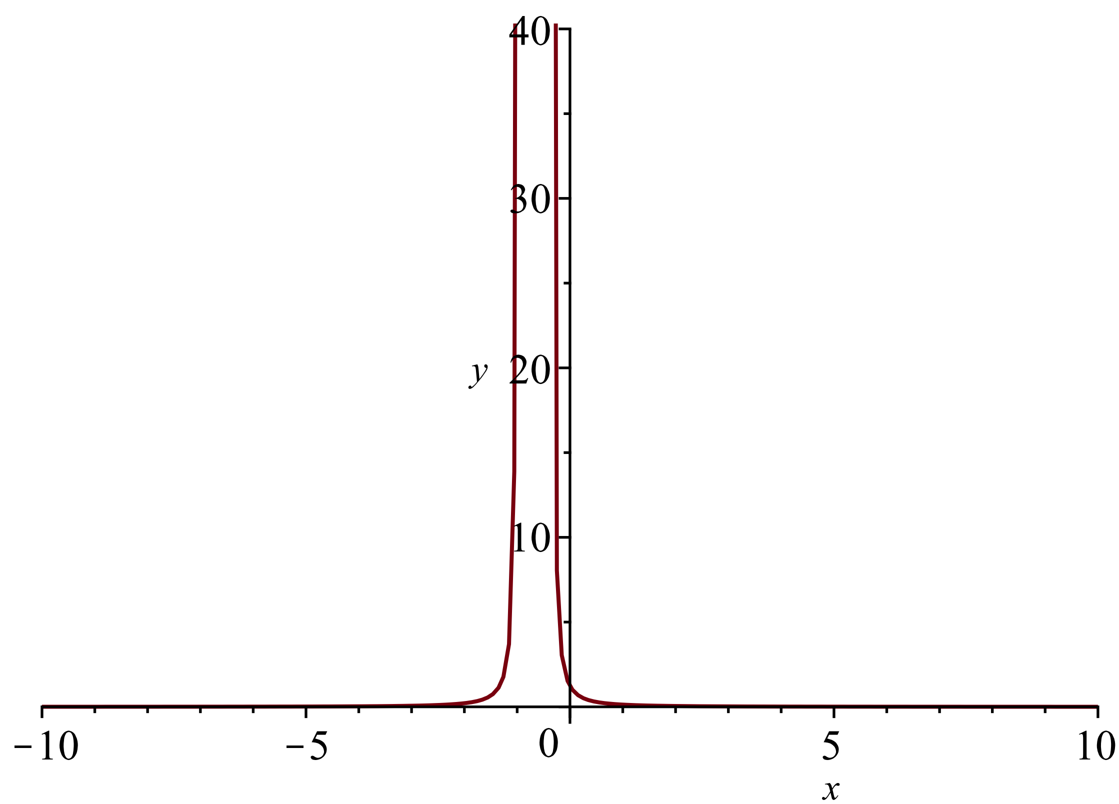
> $\mathrm{lim} := limit\left(\frac{P(n+1)}{P(n)}, n=\mathrm{infinity}\right)$

$$\mathrm{lim} := \frac{1}{3\,x^2+4\,x+2} \quad (1)$$

> $solve(|\mathrm{lim}| < 1, x)$

$$(-\infty, -1), \left(-\frac{1}{3}, \infty\right) \quad (2)$$

> $plot\left(\sum_{n=1}^{1000} P(n), x=-10..10, y=-1..40\right)$



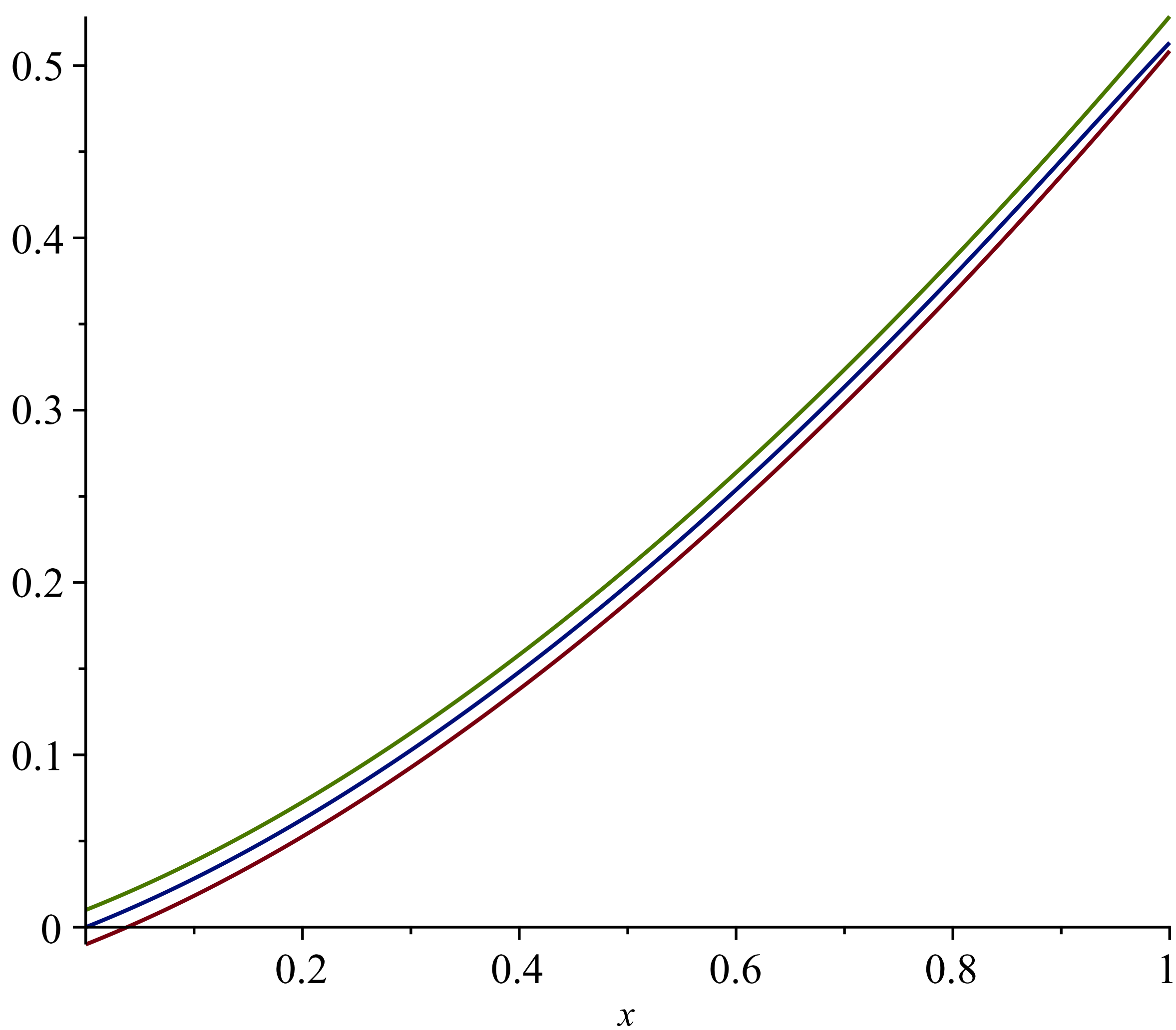
> #2

> $f := n \rightarrow (-1)^n \cdot \frac{x^n}{7 \cdot n - 11}$:

> $solve\left(\left\{\left|\frac{1}{7\cdot(n+1)-11}\right| < 0.01, n \geq 1\right\}, n\right)$

$$\{14.85714286 < n\} \quad (3)$$

> $plot([sum(f(n), n=1..1000) - 0.01, sum(f(n), n=1..15), sum(f(n), n=1..1000) + 0.01],$
$x=0..1)$



> #3

> $f := e^{-6 \cdot x^2}$:

> $evalf(int(f, x = 0 ..0.1), 3)$

$$0.0980 \tag{4}$$

> $taylor(f, x = 0, 6)$

$$1 - 6x^2 + 18x^4 + O(x^6) \tag{5}$$

> $taylor\_n := \dfrac{(-1)^n \cdot 6^n \cdot x^{2 \cdot n}}{n!}$

$$taylor\_n := \frac{(-1)^n 6^n x^{2n}}{n!} \tag{6}$$

> $int(taylor\_n, x)$

$$\frac{(-1)^n x^{2n+1} 6^n}{(2n+1)\, n!} \tag{7}$$

> $n = fsolve\left(\dfrac{6^{n+1} \cdot 0.1^{2n+3}}{(2n+3) \cdot (n+1)!} = \dfrac{1}{1000}, n\right)$

$$n = 0.1767592307 \tag{8}$$

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