> **#LR2 Krasovskii Vladislav(var1)**
> **#1.1**
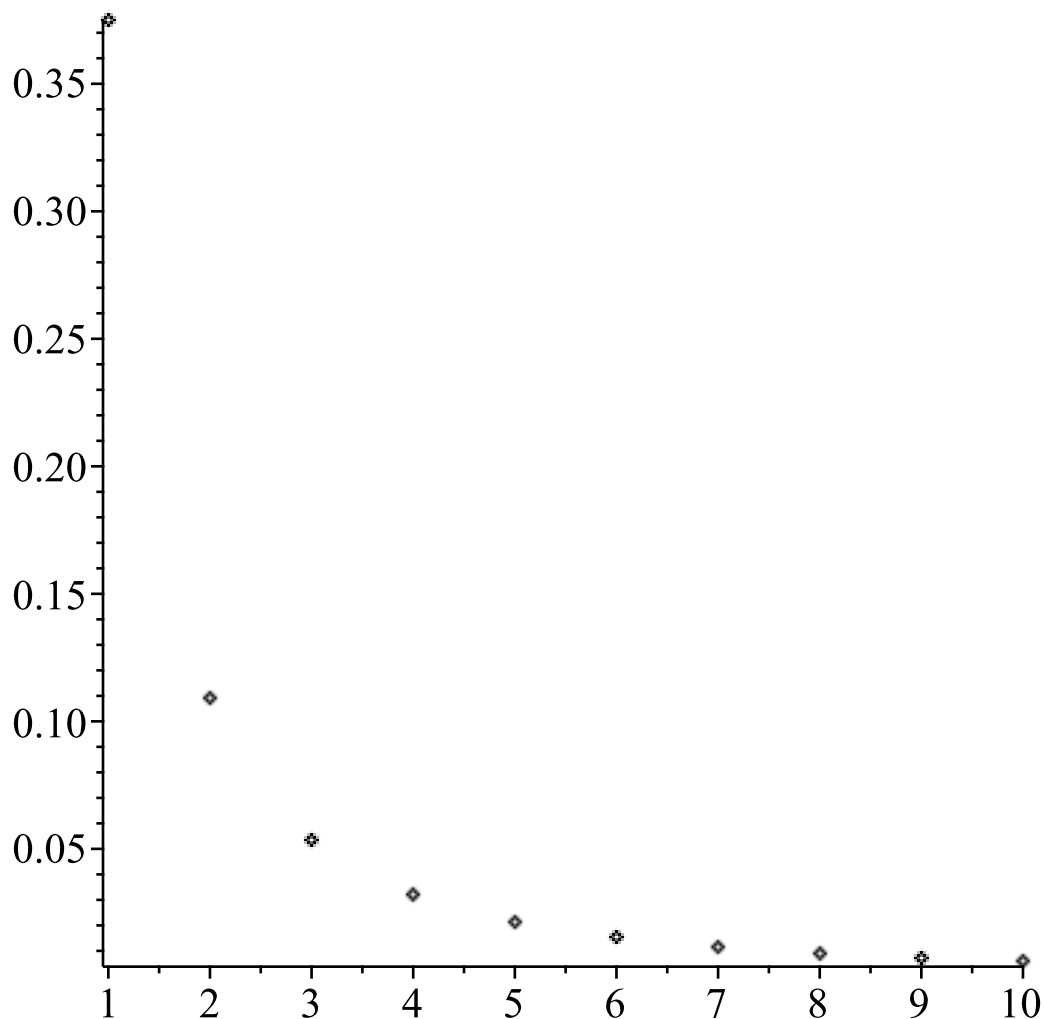> $f := \dfrac{6}{9\,n^2 + 12\,n - 5}$:

> $limit(f, n = \text{infinity})$

$$0 \tag{1}$$

> $plots[pointplot](\{seq([n, f], n = 1..10)\})$

> $sum1 := sum(f, n = 1..\text{infinity})$

$$sum1 := \frac{7}{10} \tag{2}$$

> $solve(\{|sum1 - sum(f, n = 1..k)| < 0.1, k \geq 1\}, k)$

$$\{5.537291403 < k\} \tag{3}$$
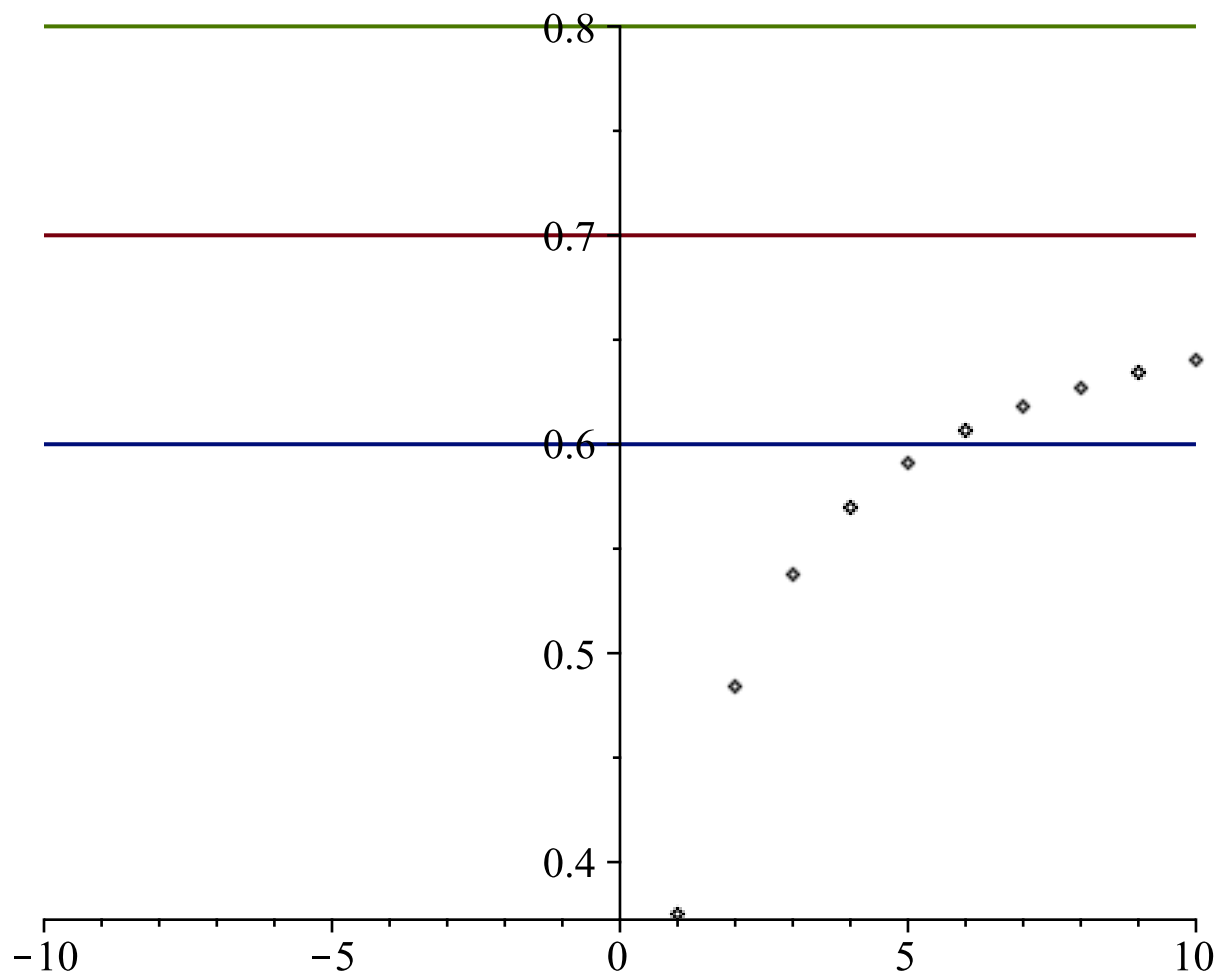
> $plot1 := plot([sum1, sum1 - 0.1, sum1 + 0.1])$:
> $sumk := sum(f, n = 1..k)$

$$sumk := -\frac{1}{3\left(k + \dfrac{2}{3}\right)} - \frac{1}{3\left(k + \dfrac{5}{3}\right)} + \frac{7}{10} \tag{4}$$

> $plot2 := plots[pointplot](\{seq([k, |sumk|], k = 1..10)\})$:
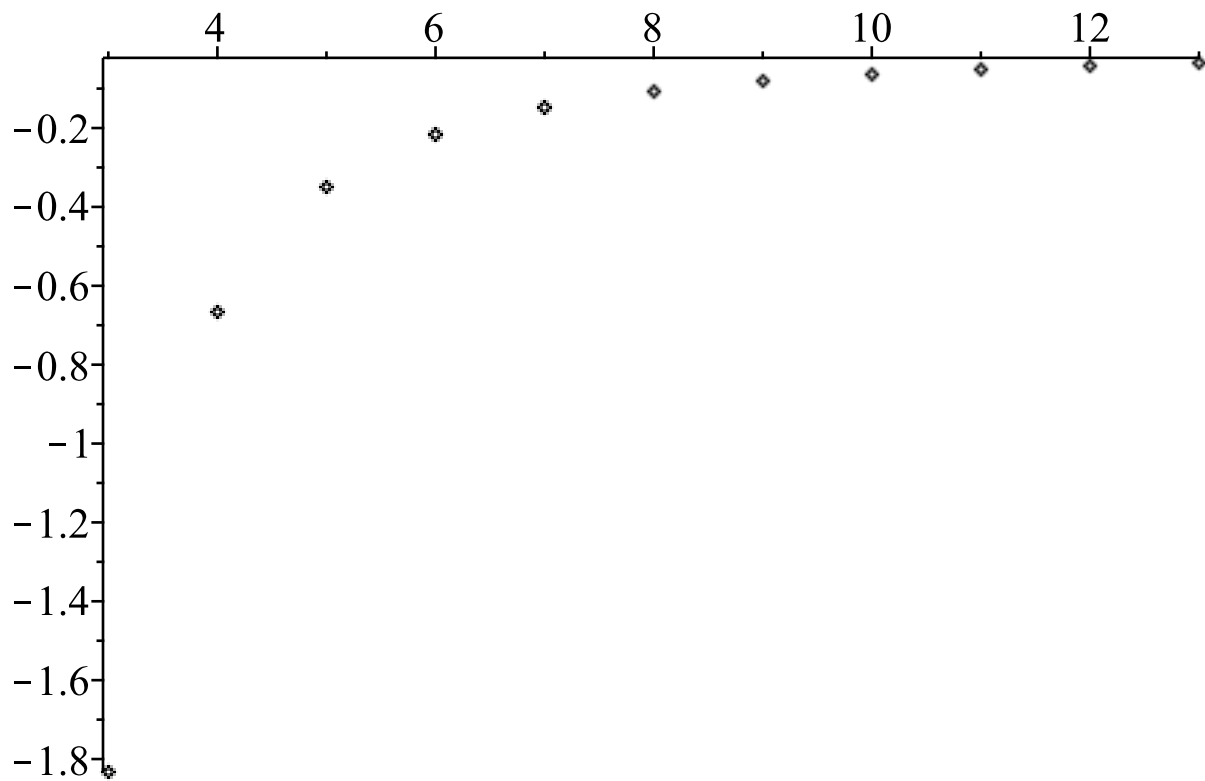> $plots[display](plot1, plot2)$

> **#1.2**

> $f := \dfrac{4 - 5n}{n \cdot (n-1) \cdot (n-2)}$:

> $limit(f, n = \text{infinity})$

$$0 \hspace{5cm} \textbf{(5)}$$

> $plots[pointplot](\{seq([n, f], n = 3..13)\})$

> $sum1 := sum(f, n = 3 ..\text{infinity})$
$$sum1 := -4 \tag{6}$$

> $solve(\{|sum1 - sum(f, n = 3 .. k)| < 0.1, k \geq 1\}, k)$
$$\{50.60478042 < k\} \tag{7}$$
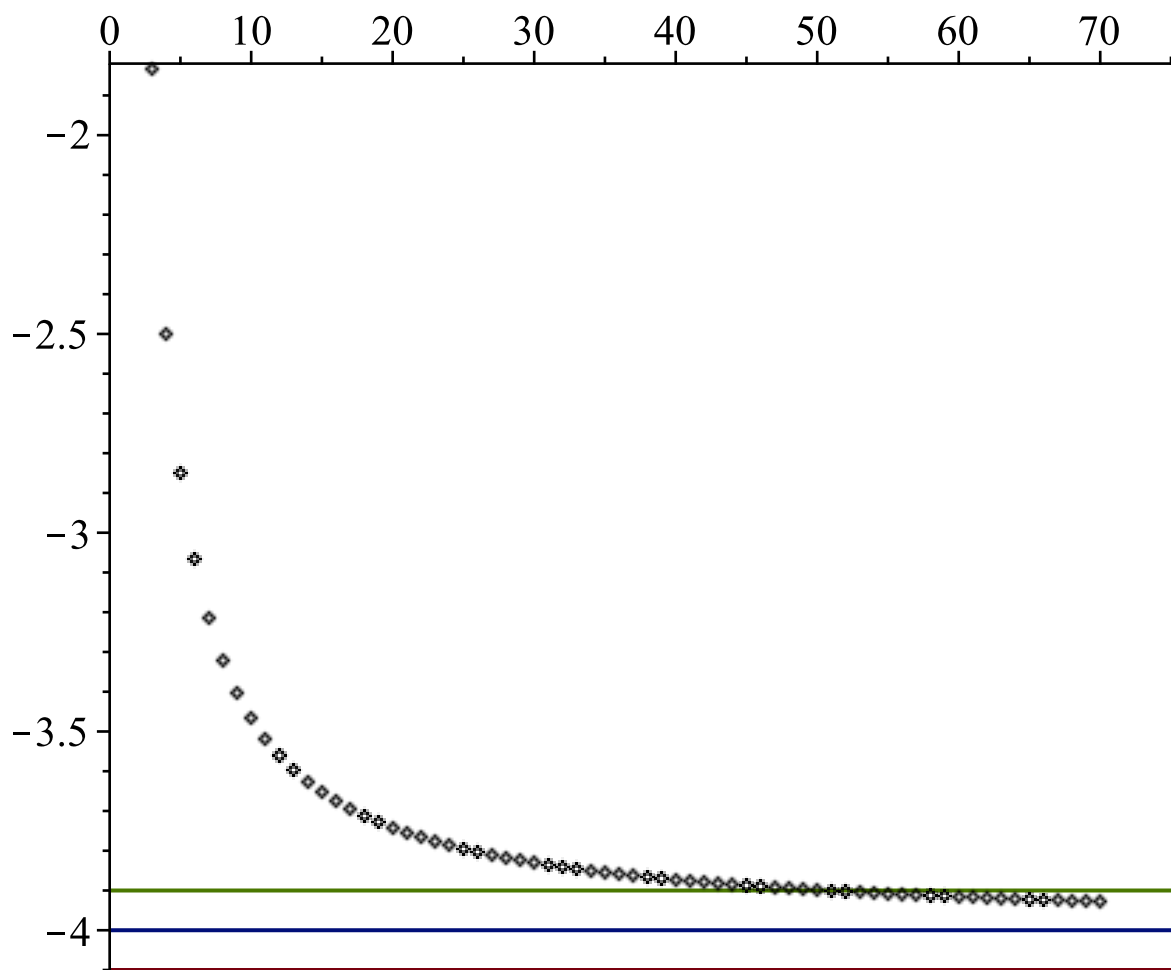
> $plot1 := plot([sum1 - 0.1, sum1, sum1 + 0.1], 0 ..75) :$
> $sumk := sum(f, n = 3 ..k)$
$$sumk := \frac{3}{k-1} + \frac{2}{k} - 4 \tag{8}$$

> $plot2 := plots[pointplot](\{seq([k, sumk], k = 3 ..70)\}) :$
> $plots[display](plot1, plot2)$

> **#2**

> $f := (-1)^{n+1} \dfrac{1}{3\,n^2}$:
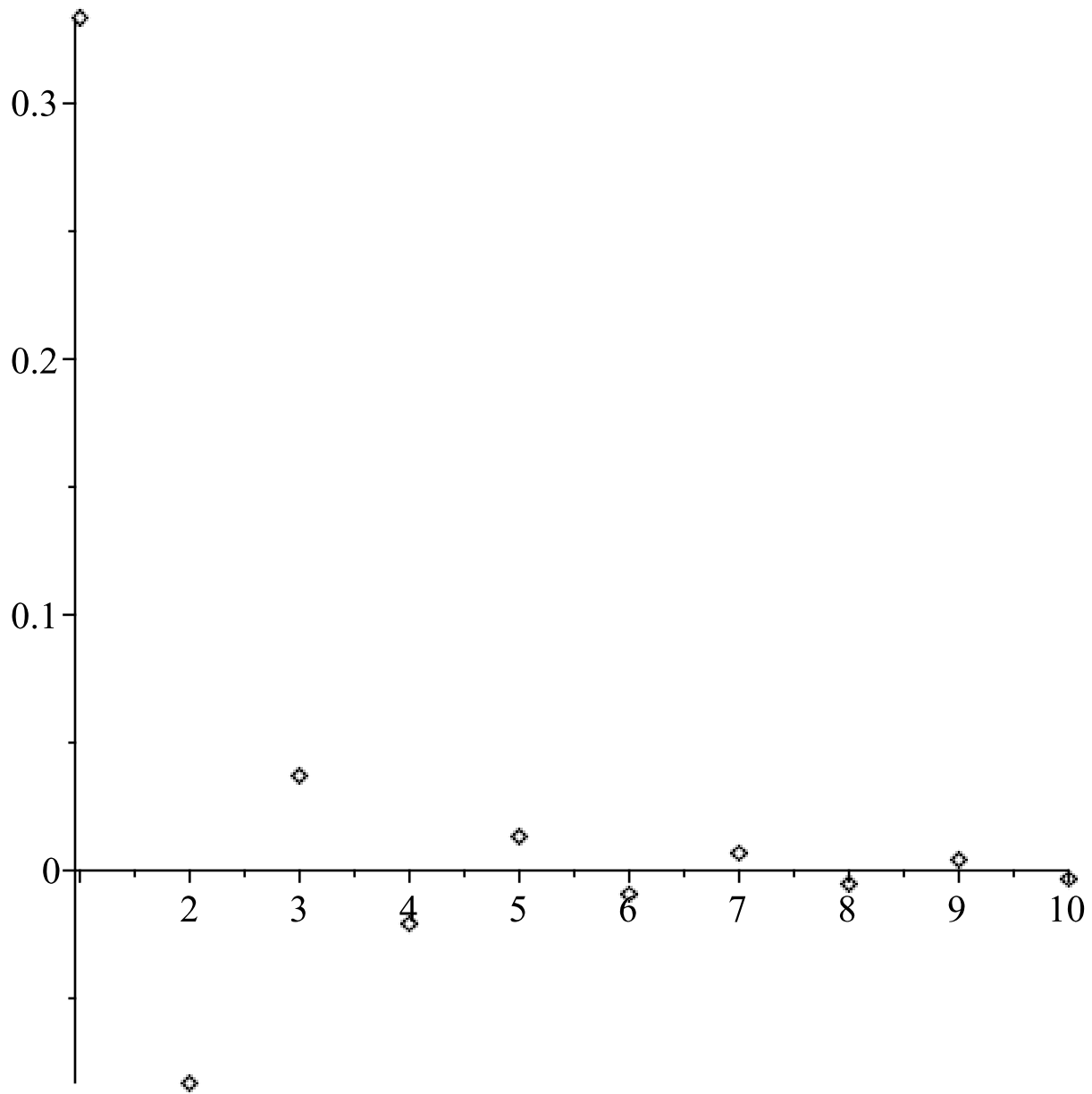
> $limit(|f|, n = \text{infinity})$

$$0 \qquad\qquad\qquad\text{(9)}$$

> $int\left(\dfrac{1}{3\,n^2}, n = 1 \,..\,\text{infinity}\right)$

$$\dfrac{1}{3} \qquad\qquad\qquad\text{(10)}$$

> $plots[\,pointplot\,](\{seq([n, f], n = 1\,..10)\})$

> $sum1 := sum(f, n = 1 .. \text{infinity})$

$$sum1 := \frac{\pi^2}{36} \tag{11}$$

> $sumk := sum(f, n = 1 .. k)$

$$sumk := \frac{\pi^2}{36} - \frac{\left(\dfrac{k^2 + 2k + 1}{k^2} - (k^2 + 2k + 1) \, \text{LerchPhi}(-1, 2, k) \right) (-1)^k}{3(k+1)^2} \tag{12}$$

> $solve\left(\left\{ \dfrac{1}{3(n+1)^2} < 0.01, n > 0 \right\}, n \right);$
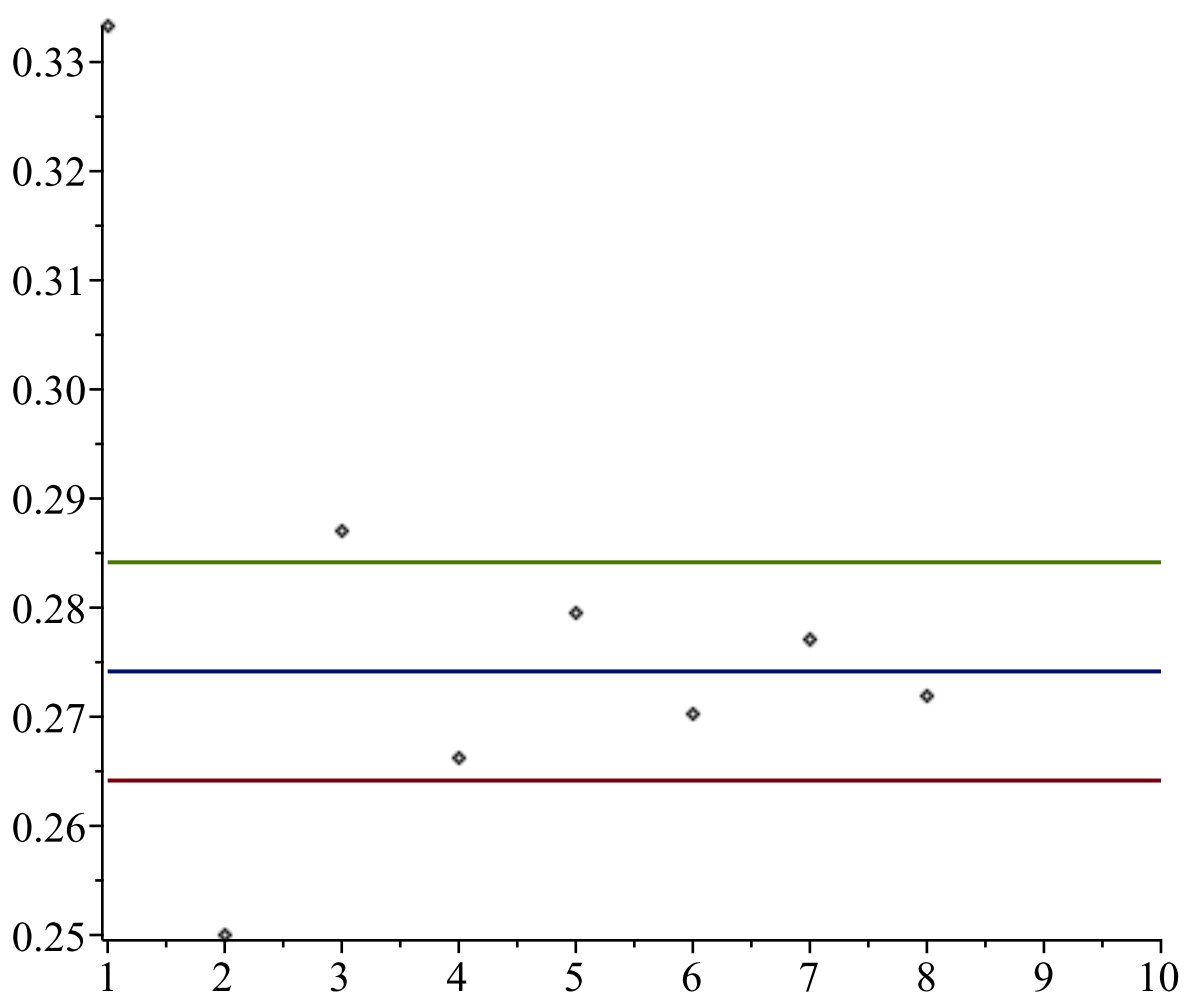
$$\{4.773502692 < n\} \tag{13}$$

> $plot1 := plot([sum1 - 0.01, sum1, sum1 + 0.01], 1 .. 10) :$

> $plot2 := plots[pointplot](\{seq([k, sumk], k = 1 .. 8)\}) :$

$limit\left(\dfrac{(n+1)! \cdot n^n}{(n+1)^{n+1} \cdot n!}, n = \text{infinity}\right)$

$$e^{-1}$$

(14)