Answer on Question #70129 – Math – Calculus

Question

Evaluate: $\lim\limits_{t\to\infty}\dfrac{4t^2-8}{t-2}$.

Solution

$$\lim_{t\to\infty}\frac{4t^2-8}{t-2}=\left\{\frac{\infty}{\infty}\right\}=\lim_{t\to\infty}\frac{4t^2\left(1-\frac{2}{t^2}\right)}{t\left(1-\frac{2}{t}\right)}=$$

$$=\lim_{t\to\infty}\frac{4t\left(1-\frac{2}{t^2}\right)}{\left(1-\frac{2}{t}\right)}=\begin{bmatrix}\frac{2}{t^2}\to 0\ as\ t\to\infty\\ \left(1-\frac{2}{t^2}\right)\to 1\ as\ t\to\infty\\ \frac{2}{t}\to 0,\ as\ \ t\to\infty\\ \left(1-\frac{2}{t}\right)\to 1\ as\ \ t\to\infty\\ 4t\to\infty\ as\ \ t\to\infty\end{bmatrix}=\left\{\frac{\infty\cdot 1}{1}\right\}=\infty .$$

Answer: ∞ **.**