Math 2143 - Brief Calculus with Applications

Quiz #5 - 2020.01.29

Solutions

Compute the following limit:

$$\begin{aligned}
\lim_{x\to 2}\frac{\sqrt{2x+5}-3}{x-2} &= \lim_{x\to 2}\frac{\sqrt{2x+5}-3}{x-2}\cdot\frac{\sqrt{2x+5}+3}{\sqrt{2x+5}+3}\\
&= \lim_{x\to 2}\frac{2x+5-9}{(x-2)(\sqrt{2x+5}+3)}\\
&= \lim_{x\to 2}\frac{2x-4}{(x-2)(\sqrt{2x+5}+3)}\\
&= \lim_{x\to 2}\frac{2(x-2)}{(x-2)(\sqrt{2x+5}+3)}\\
&= \lim_{x\to 2}\frac{x-2}{x-2}\cdot\frac{2}{\sqrt{2x+5}+3}\\
&= \lim_{x\to 2}\frac{x-2}{x-2}\cdot\lim_{x\to 2}\frac{2}{\sqrt{2x+5}+3}\\
&= 1\cdot\frac{2}{6}\\
&= \frac{1}{3}
\end{aligned}$$