Math 2215 - Calculus 1

Quiz #13 - 2017.09.26

Solutions

Compute the following derivative:

$$\begin{aligned}
\frac{\mathrm{d}}{\mathrm{d}x}\left[5\sin^3(x^2+\cos^5(7x+1))\right] &= 15\sin^2(x^2+\cos^5(7x+1))\cdot\frac{\mathrm{d}}{\mathrm{d}x}\sin(x^2+\cos^5(7x+1)) \\
&= 15\sin^2(x^2+\cos^5(7x+1))\cdot\cos(x^2+\cos^5(7x+1))\frac{\mathrm{d}}{\mathrm{d}x}\left[x^2+\cos^5(7x+1)\right] \\
&= 15\sin^2(x^2+\cos^5(7x+1))\cdot\cos(x^2+\cos^5(7x+1)) \\
&\quad\times\left[2x+5\cos^4(7x+1)\frac{\mathrm{d}}{\mathrm{d}x}\cos(7x+1)\right] \\
&= 15\sin^2(x^2+\cos^5(7x+1))\cdot\cos(x^2+\cos^5(7x+1)) \\
&\quad\times\left[2x+5\cos^4(7x+1)\cdot(-\sin(7x+1))\cdot 7\right]
\end{aligned}$$