Session 10

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Solutions

1.

$$\begin{aligned}
\frac{d}{dx}\left(\frac{x^2}{x+1}\right) &= \frac{2x(x+1)-x^2}{(x+1)^2} && (1)\\
&= \frac{2x^2+2x-x^2}{(x+1)^2} && (2)\\
&= \frac{2x\,(x+1)}{(x+1)(x+1)} && (3)\\
&= \frac{2x}{x+1} && (4)
\end{aligned}$$

2.

$$\begin{aligned}
\frac{d}{dx}\left(\frac{x^4+1}{x^2}\right) &= \frac{4x^3x^2-\left(x^4+1\right)2x}{x^4} && (5)\\
&= \frac{4x^5-2x^5-2x}{x^4} && (6)\\
&= \frac{2x\left(x^4-1\right)}{x^4} && (7)\\
&= \frac{2\left(x^4-1\right)}{x^3} && (8)
\end{aligned}$$

3.

$$\begin{aligned}
\frac{d}{dx}\left(\frac{\sin(x)}{x}\right) &= \frac{x\cos(x)-sin(x)}{x^2} && (9)\\
&= \frac{\cos(x)}{x}-\frac{\sin(x)}{x}\frac{1}{x}??? && (10)\\
& && (11)
\end{aligned}$$

My solutions appear to be correct !!!