

$$\begin{aligned} \textcircled{72} \quad y &= 1 - \cos 2x + 2\cos^2 x \\ y' &= \sin(2x)(2) + 4\cos x(-\sin x) \\ y' &= 2\sin 2x - 4\sin x \cos x \\ &= 4\sin x \cos x - 4\sin x \cos x \\ &= 0 \end{aligned}$$

$$\begin{aligned} \textcircled{74} \quad y &= \csc 3x + \cot(3x) \\ y' &= -\csc 3x \cot 3x (3) + -\csc^2(3x)(3) \\ y' &= -3\csc 3x (\cot 3x + \csc 3x) \\ y' &= -3\csc(3x) (\cot(3x) + \csc(3x)) \end{aligned}$$

$$\begin{aligned} \textcircled{76} \quad y &= \frac{1}{7} \sec^7 x - \frac{1}{5} \sec^5 x \\ y' &= 7 \cdot \frac{1}{7} \sec^6 x \cdot \sec x \tan x - \frac{1}{5} \cdot 5 \sec^4 x \cdot \sec x \tan x \\ y' &= \sec^7 x \tan x - \sec^5 x \tan x \\ y' &= \sec^5 x \tan x (\sec^2 x - 1) \\ y' &= \sec^5 x \tan^3 x \end{aligned}$$

$$\begin{aligned} \textcircled{80} \quad y &= \frac{\cos(x-1)}{x-1} \\ y' &= \frac{(x-1)(-\sin(x-1)) - \cos(x-1)}{(x-1)^2} \\ y' &= \frac{-(x-1)(\sin(x-1)) - \cos(x-1)}{(x-1)^2} \end{aligned}$$

$$\begin{aligned} \textcircled{91} \quad f(x) &= \cot x \\ f'(x) &= -\csc^2 x \\ f''(x) &= -2\csc x (\csc x \cot x) \\ &= -2\csc^2 x \cot x \end{aligned}$$

$$\begin{aligned} \textcircled{89} \quad y &= 2x^2 + \sin 2x \\ y' &= 4x + 2\cos(2x) \\ y'' &= 4 - 2\sin(2x) \cdot 2 \\ y'' &= 4 - 4\sin(2x) \end{aligned}$$