1. $y = 4\cos x - 8\sqrt{x} + 8\ln x + \dfrac{8}{x^8}$, so $y = 4\cos x - 8x^{\frac{1}{2}} + 8\ln x + 8x^{-8}$, so

$$\begin{aligned} y' &= 4 \times (-\sin x) - \frac{1}{2} \times 8 \times x^{\frac{1}{2}-1} + 8 \times \frac{1}{x} - 8 \times 8x^{-8-1} \\ &= -4\sin x - 4x^{-\frac{1}{2}} + \frac{8}{x} - 64x^{-9} \\ &= -4\sin x - \frac{4}{\sqrt{x}} + \frac{8}{x} - \frac{64}{x^9} \end{aligned}$$

Hence $y' = -4\sin x - \dfrac{4}{\sqrt{x}} + \dfrac{8}{x} - \dfrac{64}{x^9}$.

2. $y = -3\sin x - \sin x + 2e^x$, so

$$y' = -3\cos x - \cos x + 2e^x$$

Hence $y' = -3\cos x - \cos x + 2e^x$.

3. $y = -3e^x$, so

$$y' = -3e^x$$

Hence $y' = -3e^x$.