1 Differenciation

Differenciate the following equations:

$$4 - 10\tan(\sin(x)) \tag{1}$$

$$-9\sec(e^x) - 4 \tag{2}$$

$$\frac{1}{\cos^3(x)} \tag{3}$$

$$\frac{1}{-10\cot(x) - 9} \tag{4}$$

$$\sin(\cos(\ln(x))) \tag{5}$$

$$\cot\left(\frac{1}{\cot^5(x)}\right) \tag{6}$$

$$8\cos(\tan(x)) - 10 \tag{7}$$

$$\sin(x) \tag{8}$$

$$\cos\left(e^{\csc(x)}\right) \tag{9}$$

$$\cot(\sec(\ln(x))) \tag{10}$$

$$\ln\left(\csc\left(\frac{1}{x}\right)\right) \tag{11}$$

$$\cos(\sin(e^x)) \tag{12}$$

$$\frac{1}{\sec^6(\sin(x))} \tag{13}$$

$$\cos\left(e^{\ln(x)}\right) \tag{14}$$

$$\sec\left(e^{\tan(x)}\right) \tag{15}$$

$$\ln(\cos(\ln(x))) \tag{16}$$

$$\tan(\tan(\ln(x))) \tag{17}$$

$$\ln(\tan(\tan(x))) \tag{18}$$

$$4\cos(\csc(x)) + 4 \tag{19}$$

$$9\cos\left(\frac{1}{x}\right) - 1 \tag{20}$$

2 Matrices

Find the inverse of the following matrices:

$$\begin{bmatrix} 0 & -9 & -9 \\ 1 & -3 & -3 \\ -9 & -2 & -6 \end{bmatrix} \tag{21}$$

$$\begin{bmatrix} 6 & 0 & 6 \\ -2 & 4 & -8 \\ 5 & 6 & 5 \end{bmatrix} \tag{22}$$

$$\begin{bmatrix} -8 & -8 & 6 \\ -5 & 8 & -6 \\ 8 & -1 & 0 \end{bmatrix} \tag{23}$$

$$\begin{bmatrix} 8 & 2 & -6 \\ -7 & 3 & 2 \\ 8 & 2 & 3 \end{bmatrix} \tag{24}$$

$$\begin{bmatrix} 5 & 8 & 0 \\ -5 & 2 & 5 \\ -5 & -8 & -9 \end{bmatrix} \tag{25}$$

$$\begin{bmatrix} 9 & 7 & 0 \\ 1 & 7 & 3 \\ 1 & 1 & -3 \end{bmatrix} \tag{26}$$

$$\begin{bmatrix} 2 & 1 & -7 \\ -4 & 5 & -8 \\ 8 & -5 & 7 \end{bmatrix} \tag{27}$$

$$\begin{bmatrix} 0 & 9 & 4 \\ 3 & 7 & 2 \\ 5 & 1 & -6 \end{bmatrix} \tag{28}$$

$$\begin{bmatrix} 2 & 6 & 8 \\ 4 & 9 & -6 \\ 1 & 8 & -4 \end{bmatrix} \tag{29}$$

$$\begin{bmatrix} -1 & -1 & 9 \\ -9 & 4 & -7 \\ -9 & 1 & 7 \end{bmatrix} \tag{30}$$