

**Solución**

$$\text{a) } (3A)^{-1} = \frac{1}{3}A^{-1} = \begin{pmatrix} \frac{1}{9} & \frac{1}{9} \\ \frac{1}{9} & \frac{-2}{9} \end{pmatrix}$$

$$\text{b) } (AB)^{-1} = B^{-1}A^{-1} = \begin{pmatrix} \frac{-2}{3} & \frac{7}{3} \\ \frac{1}{3} & \frac{-2}{3} \end{pmatrix}$$

$$\text{c) } (AB)^{-1} = \begin{pmatrix} \frac{-2}{3} & \frac{7}{3} \\ \frac{1}{3} & \frac{-2}{3} \end{pmatrix} \quad A^{-1}B^{-1} = \begin{pmatrix} \frac{1}{3} & \frac{-2}{3} \\ \frac{1}{3} & \frac{-5}{3} \end{pmatrix}$$

$$\text{d) } (A + B)^{-1} = \begin{pmatrix} 0 & 1 \\ \frac{1}{4} & \frac{-3}{4} \end{pmatrix} \quad A^{-1} + B^{-1} = \begin{pmatrix} \frac{4}{3} & \frac{-8}{3} \\ \frac{1}{3} & \frac{1}{3} \end{pmatrix}$$

$$\text{e) } (B^t)^{-1} = (B^{-1})^t = \begin{pmatrix} 1 & 0 \\ -3 & 1 \end{pmatrix}$$