Question 1

$$\sqrt{3} - j$$

$$\sqrt{3} + j$$

$$\sqrt{\frac{3}{2}} + \frac{1}{2}j$$

$$\sqrt{3} + 2j$$

Question 2

$$2\sqrt{2}e^{j3\pi/4}$$

$$2e^{-j3\pi/4}$$

$$2\sqrt{3}e^{j3\pi/2}$$

$$2\sqrt{3}e^{j2\pi/3}$$

Question 3

$$\frac{\beta}{s^2 + 2\alpha s + \beta^2}$$

$$\frac{\beta}{s^2 + \alpha s + \alpha^2 + \beta^2}$$

$$\frac{\beta}{(s + \alpha + j\beta)(s + \alpha - j\beta)}$$

$$\frac{\beta}{s^2 + 2\alpha s + \alpha^2 + \beta^2}$$

Question 4

$$\frac{F(s)}{1 + G(s)H(s)} R(s)$$

$$\frac{F(s) + G(s)}{1 + G(s)H(s)} R(s)$$

$$\frac{F(s) + G(s)}{1 - G(s)H(s)} R(s)$$

$$\frac{F(s) + G(s)}{G(s) + H(s)} R(s)$$

Question 5

$$\frac{H(s)}{1 + H(s)G(s)}$$

$$\frac{H(s)}{1 - H(s)G(s)}$$

$$\frac{1}{1 + H(s)G(s)}$$

$$\frac{G(s)H(s)}{1 + H(s)G(s)}$$

Question 6a

$$e^{-t} + e^{-2t}$$

$$e^{-2t} + e^{-3t}$$

$$e^{t} + e^{2t}$$

Question 6

3

$$2\sqrt{2}e^{-\sqrt{3}t}\cos(t - \frac{\pi}{4})$$

$$\sqrt{2}e^{-\sqrt{3}t}\cos(t - \frac{\pi}{4})$$

$$2\sqrt{2}e^{-\sqrt{3}t}\cos(t - \frac{\pi}{6})$$

Question 7

$$\begin{bmatrix} -2 & 1 \\ \frac{3}{2} & \frac{-1}{2} \end{bmatrix}$$

$$\begin{bmatrix} 2 & 1 \\ \frac{3}{2} & \frac{-1}{2} \end{bmatrix}$$

$$\begin{bmatrix} -2 & 1 \\ \frac{3}{2} & \frac{1}{2} \end{bmatrix}$$

Question 8

$$A^{-1}B^{-1}$$

$$B^{-1}A^{-1}$$

4

$$(BA)^{-1}$$

Question 9

$$\begin{bmatrix} \frac{1}{d_1} & & \\ & \frac{1}{d_2} & \\ & & \frac{1}{d_3} \end{bmatrix}$$

$$\begin{bmatrix} \frac{-1}{d_1} & & \\ & \frac{-1}{d_2} & \\ & & \frac{-1}{d_3} \end{bmatrix}$$

$$\begin{bmatrix} \frac{1}{d_3} & & \\ & \frac{1}{d_2} & \\ & & \frac{1}{d_1} \end{bmatrix}$$

Question 10