Practice Quiz 1

(no calculators allowed)

1) If $z = \frac{2-j}{3+2j}$, compute the **magnitude** of z, $|z|$

2) If $z = \frac{1}{1+j}$, compute the **phase** of z, $\angle z$

3) If $z = \frac{1+j}{1-j}$, compute the **phase** of z, $\angle z$

4) If $z = \frac{2-j}{3+2j}$, compute the **complex conjugate** of z, z^*

5) If $z = \frac{1}{1+j\omega}e^{j\theta}$, compute the **complex conjugate** of z, z^*

6) If $z = \frac{1}{1+j\omega}e^{j\theta}$, compute the **magnitude** of z, $|z|$

7) We can write $e^{jk\pi}$ as a) 1 b) $(-1)^k$ c) 0

8) We can write j in polar form as a) $e^{j\pi}$ b) $e^{-j\pi}$ c) $e^{j\frac{\pi}{2}}$ d) $e^{-j\frac{\pi}{2}}$

9) We can write -1 in polar form as a) $e^{j\pi}$ b) $e^{-j\pi}$ c) $e^{j\frac{\pi}{2}}$ d) $e^{-j\frac{\pi}{2}}$

10) If we made the variable substitution $\sigma = \lambda - 1$ in the integral $\int_0^5 x(\lambda-1)d\lambda$, what is the new integral?

11) If we made the variable substitution $\sigma = 1-\lambda$ in the integral $\int_{-\infty}^{6} x(1-\lambda)d\lambda$, what is the new integral?

12) If we made the variable substitution $\sigma = \frac{\lambda}{2}$ in the integral $\int_{-\infty}^{6} x\left(\frac{\lambda}{2}\right)d\lambda$, what is the new integral?

13) If we made the variable substitution $\sigma = -\frac{\lambda}{2}$ in the integral $\int_{-4}^{6} x\left(\frac{-\lambda}{2}\right)d\lambda$, what is the new integral?

Answers:

1) $\frac{\sqrt{5}}{\sqrt{13}}$ 2) -45^o 3) $+90^o$ 4) $z^* = \frac{2+j}{3-2j}$ 5) $z = \frac{1}{1-j\omega} e^{-j\theta}$ 6) $|z| = \frac{1}{\sqrt{1+\omega^2}}$

7) $b(-1)^k$ 8) $e^{j\frac{\pi}{2}}$ 9) $e^{j\pi}$ or $e^{-j\pi}$ 10) $\int_{-1}^{4} x(\sigma)d\sigma$ 11) $\int_{-5}^{\infty} x(\sigma)d\sigma$ 12) $2\int_{-\infty}^{3} x(\sigma)d\sigma$

13) $2\int_{-3}^{2} x(\sigma)d\sigma$