

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:

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

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

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