

520.214 Signals and Systems Self Test

1. What is the polar form of the complex number $1 + j$?
 - (a) 1
 - (b) $\sqrt{2} \cdot e^{j\pi}$
 - (c) $\sqrt{2} \cdot e^{j\pi/4}$
 - (d) $2 \cdot e^{j\pi/2}$
 - (e) None of the above.

2. What is the polar form of the complex number $-1 - j$?
 - (a) $-\sqrt{2} \cdot e^{j\pi/4}$
 - (b) $\sqrt{2} \cdot e^{-j\pi/4}$
 - (c) -1
 - (d) $2 \cdot e^{-j\pi/2}$
 - (e) None of the above

3. What is the polar form of the complex number $-e^{j\pi}$?
 - (a) $1 \cdot e^{j0}$
 - (b) $e^{-j\pi}$
 - (c) $-\pi$
 - (d) $e^{j\pi}$
 - (e) None of the above

4. What is the polar form of the complex number $e^{j\pi/2}/(1 + j)$?
 - (a) $e^{j\pi/2}$
 - (b) $1/\sqrt{2}$
 - (c) $\sqrt{2} \cdot e^{j3\pi/4}$
 - (d) $(1/\sqrt{2}) \cdot e^{j\pi/4}$
 - (e) None of the above

5. What is the rectangular form of the complex number $-e^{j\pi}$?
 - (a) -1
 - (b) $-1 + j\pi$
 - (c) 1
 - (d) $-1 - j\pi$
 - (e) None of the above

6. Evaluate $(1 + j)^4$
- (a) -4
 - (b) $1 + j$
 - (c) $4 + j4$
 - (d) None of the above
7. Evaluate \sqrt{j}
- (a) $\pm j$
 - (b) $e^{j\pi/4}, e^{j5\pi/4}$
 - (c) -1
 - (d) None of the above
8. Evaluate $|e^{j10}/(3 + j4)|$
- (a) 2
 - (b) $1/7$
 - (c) $1/5$
 - (d) None of the above
9. What is the angle of the complex number $(1 + j) \cdot e^{-j\pi/4}$?
- (a) $-\pi/4$
 - (b) 0
 - (c) $\pi/2$
 - (d) None of the above
10. Simplify $\int_{-\infty}^{\infty} x(-3t + 5)dt$
- (a) $5/3$
 - (b) $\int_{-\infty}^{\infty} x(t)dt$
 - (c) $(1/3) \cdot \int_{-\infty}^{\infty} x(t)dt$
 - (d) None of the above
11. Evaluate $(d/dt) \int_0^2 x(\tau)d\tau$
- (a) $\dot{x}(t)$
 - (b) $x(t)$
 - (c) 0
 - (d) None of the above

12. Evaluate $(d/dt) \int_t^0 x(\tau) d\tau$

- (a) $\dot{x}(t)$
- (b) $-x(t)$
- (c) 0
- (d) None of the above

13. Evaluate $(d/d\tau) \int_0^t x(\tau) d\tau$

- (a) $\dot{x}(t)$
- (b) $-x(t)$
- (c) 0
- (d) None of the above

14. Evaluate $\int_0^t (d/d\tau)x(\tau) d\tau$

- (a) $x(t)$
- (b) $\dot{x}(t)$
- (c) $x(t) - x(0)$
- (d) None of the above.

15. Evaluate $\int_{-\infty}^{\infty} e^{-|t|} dt$

- (a) 2
- (b) 1
- (c) 0
- (d) None of the above.

Answers:

{e 'o 'o 'q 'o 'o 'q 'o 'q 'e 'o 'p 'e 'e 'o }