

MAT 320

Quiz 1

Fall 2018

1. Simplify: $(-1 - i)^4$

- a)
- $4e^{-i2\pi}$
- b)
- $2\sqrt{2}e^{i\pi}$
- c)
- -4
- d)
- $2e^{i\pi}$
- e)
- $4e^{i\frac{\pi}{4}}$

Correct Answer: -4 2. Simplify: $(e^{i\frac{\pi}{3}} + e^{-i\frac{\pi}{3}})^3$

- a)
- $2e^{i\frac{\pi}{3}}$
- b)
- -1
- c)
- 1
- d)
- $2e^{i2\frac{\pi}{3}}$
- e)
- $3e^{i\frac{\pi}{3}}$

Correct Answer: 1 3. Simplify: $(\cos(\frac{5\pi}{4}) + i\sin(\frac{3\pi}{4}))^2$

- a)
- $2e^{i\frac{\pi}{8}}$
- b)
- $2e^{i\frac{\pi}{2}}$
- c)
- i
- d)
- $2e^{i\frac{3\pi}{4}}$
- e)
- $-i$

Correct Answer: $-i$ 4. Simplify: $(\cos(-\frac{\pi}{4}) - i\sin(-\frac{\pi}{4}))^2$

- a)
- $2e^{i\frac{\pi}{8}}$
- b)
- $2e^{i\frac{\pi}{2}}$
- c)
- i
- d)
- $2e^{i\frac{3\pi}{4}}$
- e)
- $-i$

Correct Answer: i 5. Find the Cartesian (rectangular) form: $\frac{2+i}{2-i}$

- a)
- $\frac{3}{5} + \frac{4}{5}i$
- b)
- $\sqrt{2}(1+i)$
- c)
- $1+2i$
- d)
- $4+4i$
- e)
- 1

Correct Answer: $\frac{3}{5} + \frac{4}{5}i$ 6. Simplify: $\sum_{k=2}^9 (e^{i\frac{\pi}{4}})^k$

- a)
- -1
- b)
- $-i$
- c)
- 1
- d)
- i
- e)
- 0

Correct Answer: 0 7. Find complex dot product: $(i, 1-i) \bullet (1-i, 1+i)$

- a)
- $1+i$
- b)
- $-i$
- c)
- $-1+i$
- d)
- -1
- e)
- $-1-i$

Correct Answer: $-1-i$ 8. Find the length of the complex vector: $(1+i, 1+i)$

- a)
- 1
- b)
- 2
- c)
- $\sqrt{2}$
- d)
- $2\sqrt{2}$
- e)
- 0

Correct Answer: 2