

MAT 320

Quiz 1

Fall 2020

1. Choose a polar form: $(-1 + i)^4$

- a)
- $2e^{-i2\pi}$
- b)
- $2\sqrt{2}e^{i\pi}$
- c)
- $4e^{i\pi}$
- d)
- $2e^{i3\pi}$
- e)
- $4e^{i\frac{3\pi}{4}}$

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

- a)
- $2e^{i\frac{\pi}{3}}$
- b)
- $e^{i2\frac{\pi}{3}}$
- c) 0 d)
- $2e^{i2\frac{\pi}{3}}$
- e)
- $3e^{i\frac{\pi}{3}}$

Correct Answer: 0

3. Find the Cartesian (rectangular) form: $\frac{1+i}{1-i}$

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

Correct Answer: i 4. Simplify: $\sum_{k=1}^{15} (e^{i\frac{\pi}{8}})^k$

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

Correct Answer: -1 5. Find the length of the complex vector: $(\frac{1}{2} + \frac{\sqrt{3}}{2}i, \frac{1}{2} - \frac{\sqrt{3}}{2}i)$

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

Correct Answer: $\sqrt{2}$