Classroom Voting Questions: Precalculus

The Trigonometric Form of Complex Numbers

1. Find $|7 - 4i|$.

   (a) 3
   (b) 11
   (c) $\sqrt{33}$
   (d) $\sqrt{65}$

2. Express $-3 + 3i$ in trigonometric form, with $0 \leq \theta < 2\pi$.

   (a) $18e^{\frac{\pi}{4}i}$
   (b) $18e^{\frac{3\pi}{4}i}$
   (c) $3\sqrt{2}e^{\frac{\pi}{4}i}$
   (d) $3\sqrt{2}e^{\frac{3\pi}{4}i}$

3. Use De Moivre's Theorem to express $(1 + i)^{10}$ in the form $a + bi$, where a and b are real numbers.

   (a) 32
   (b) $32i$
   (c) -32
   (d) $-32i$

4. Find the three cube roots of 1.

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