Problem 1. **(1 point)**

If $z_1 = 2+2i$ and $z_2 = 3-3i$, find each of the following:
$(z_1)(z_2) =$ ________ $+i$ ________
$\bar{z}_1 =$ ________ $+i$ ________
$|z_1 z_2| =$ ________ $+i$ ________
$\arg(z_2) =$ ________

Answer(s) submitted:

- 12
- 0
- 2
- -2
- 12
- 0
- $\tan^{-1}(-1)$

submitted: (correct)
recorded: (correct)

Problem 2. **(1 point)**

Compute the following:
$(\cos(\frac{5\pi}{4}) + i\sin(\frac{5\pi}{4}))^7 =$ ________ $+i$ ________

Answer(s) submitted:

- $-\frac{\sqrt{2}}{2}$
- $\frac{\sqrt{2}}{2}$

submitted: (correct)
recorded: (correct)

Problem 3. **(1 point)**

If $A = \begin{bmatrix} 2 & -1 \\ 1 & 2 \end{bmatrix}$, then its eigenvalues are
$\lambda =$ ________ $\pm i$ ________
and A is diagonalized by the matrix
$R = \begin{bmatrix} \_\_ & \_\_ \\ \_\_ & \_\_ \end{bmatrix}$

Answer(s) submitted:

- 2
- 1
- $\begin{bmatrix} 1 & 1 \\ -i & i \end{bmatrix}$

submitted: (correct)
recorded: (correct)