Phileas Dazeley-Gaist **coa-feldman-es1026i-winter-2022**
Assignment Homework_07 due 02/18/2022 at 11:59pm EST

Problem 1. **(1 point)**

Let $z_1 = 7+4i$, Let $z_2 = 5-7i$, and $z_3 = -8+3i$. Evaluate the following:

$z_1 + z_2$ = ___.

$z_2 + z_1$ = ___.

$z_1 + z_3$ = ___.

$z_2 + z_3$ = ___.

Answer(s) submitted:

- 12-3i
- 12-3i
- -1+7i
- -3-4i

(correct)

Problem 2. **(1 point)**

Let $z_1 = 7+i$, Let $z_2 = 5-9i$, and $z_3 = 8$. Evaluate the following:

z_1^2 = ___.

$z_1 * z_2$ = ___.

$z_2 * z_1$ = ___.

$z_1 * z_3$ = ___.

$z_2 * z_3$ = ___.

Answer(s) submitted:

- 48+14i
- 44-58i
- 44-58i
- 56+8i
- 40-72i

(correct)

Problem 3. **(1 point)**

Let $f(z) = z^2 - 1$. What are the first two iterates of the seed $z_0 = 4+i$?

z_1 = ___.

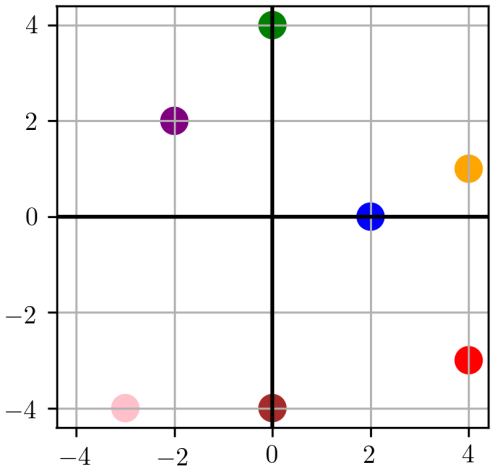
z_2 = ___.

Answer(s) submitted:

- 14+8i
- 131+224i

(correct)

Problem 4. **(1 point)**



What are the complex numbers shown above on the complex number plane?

The red circle is z = ___.

The orange circle is z = ___.

The blue circle is z = ___.

The green circle is z = ___.

The purple circle is z = ___.

The brown circle is z = ___.

The pink circle is z = ___.

Answer(s) submitted:

- 4-3i
- 4+i
- 2
- 4i
- -2+2i
- -4i
- -3-4i

(correct)

Problem 5. **(1 point)**

The Henon map is given by:

$x_{n+1} = 1 + y_n - ax_n^2$, and $y_{n+1} = bx_n$. The parameter values are $a = 0.15$ and $b = 0.6$.

Calculate the first two iterates for the initial conditions $x_0 = 0.2$ and $y_0 = 0.6$.

x_1 = ___, y_1 = ___.

x_2 = ___, y_2 = ___.

Answer(s) submitted:

- `1.594`
- `0.12`
- `0.7388746`
- `0.9564000`

(correct)