Name: Solution

MAC1105 Section 1A26
Quiz 5

Please show all of your work in a NEAT and ORGANIZED fashion.

1. (4 points) A square has an area that is numerically 9 more than twice its perimeter. What is the length of a side? (The side length is measured in centimeters.)

\[
\begin{align*}
  A &= s^2 \\
  P &= 4s \\
  s &= \text{side length (cm)}
\end{align*}
\]

\[
\begin{align*}
  A &= 2(P) + 9 \\
  s^2 &= 2(4s) + 9 \\
  s^2 &= 8s + 9 \\
  s^2 - 8s - 9 &= 0 \\
  (s-9)(s+1) &= 0 \\
  s &= 9
\end{align*}
\]

The length of a side is 9 centimeters.

2. (3 points) Write the complex number in standard form \(a + bi\) and simplify any fractions completely.

\[
\frac{20 + \sqrt{-16}}{4} = \frac{20 + \sqrt{4i^2}}{4} = \frac{20 + 4i}{4} = 5 + i
\]

3. (3 points) Multiply and write your answer in standard form.

\[
(7 + 2i)^2 = (7 + 2i)(7 + 2i) = (49 + 14i + 14i + 4i^2) = 49 + 4i + 14i - 4 = 45 + 28i
\]