Bergen County Math League
Calculators Permitted

Contest #3 **2025-2026** **Answers/Solutions**

3-1. **Answer:** 18

Since $s^3 = 3(6s^2), s = 18.$

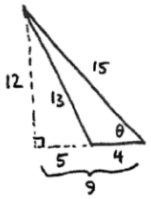
3-2. **Answer:** $-2 - 3i$

$1 - 2i = -2 + mi \Leftrightarrow mi = 3 - 2i, m = \frac{3-2i}{i}, m = -2 - 3i.$

3-3. **Answer:** 10

Each of the n integers in the second set is n more than its correspondingly located integer in the first set. Thus, $n^2 = 100$ and $n = 10$.

3-4. **Answer:** $\frac{4}{5}$



$\sin\theta = \frac{4}{5}$.

The law of cosines may also be used.

3-5. **Answer:** 74

$f(x) = x^2 + 7x + k$, so $f(k) = -16 = k^2 + 7k + k \Leftrightarrow k^2 + 8k + 16 = 0 \Rightarrow (k + 4)^2 = 0$, so $k = -4$

$$f(6) = 6^2 + 7(6) - 4 = 74$$

3-6. **Answer:** 178

The measures of the angles of the pentagon form an arithmetic sequence, so they are:

$$38, 38 + d, 38 + 2d, 38 + 3d, 38 + 4d$$

In a pentagon, the sum of the interior angles is 540°, so, adding, $190 + 10d = 540, 10d = 350.$

So $d = 35$ and $38 + 4d = 178.$