

Math 156: Workshop 1

Name: _____

Write your solutions neatly, or else points will be deducted.

1. (p.8 #52) Sketch the following set of points in the x - y plane: $\{(x, y) \in \mathbb{R}^2 : (y - x^2)(y + x^2) = 0\}$.
2. (p.11 #18) Sketch the Cartesian product $\mathbb{Z} \times \mathbb{Z}$ on the x - y plane \mathbb{R}^2 .
3. (p.17 #18) Suppose that $|A| = m$ and $|B| = n$. Find the cardinality of $\mathcal{P}(A \times \mathcal{P}(B))$.
4. (p.20 #10) Decide whether the statement “ $(\mathbb{R} - \mathbb{Z}) \times \mathbb{N} = (\mathbb{R} \times \mathbb{N}) - (\mathbb{Z} \times \mathbb{N})$ ” is true or false. Explain.
5. (p.21 #6) Sketch the set $X = \{(x, y) \in \mathbb{R}^2 : y < x^2\}$. On a separate graph, shade in the set \overline{X} .
6. (p.23 #10) Draw a Venn diagram for $(A - B) \cup C$.
7. (p.29 #12) If $\bigcap_{\alpha \in I} A_\alpha = \bigcup_{\alpha \in I} A_\alpha$, what do you think can be said about the relationships between the sets A_α ?