

PHILOSOPHY AND FUN OF ALGEBRA

CHAPTER 15: THE SQUARE ROOT OF MINUS ONE

When you come to quadratic equations you will be confronted with an entity (or non-entity) whose name is written this way— $\sqrt{-1}$, and pronounced "square root of minus one." Many people let this nonentity persuade them to foolish courses. A story is told of a man at Cambridge who was expected to be Senior Wrangler; but he got thinking about the square root of minus one as if it were a reality, till he lost his sleep and dreamed that he was the square root of minus one and could not extract himself; and he became so ill that he could not go to his examination at all. Angels, and square roots of negative quantities, and the other things that have no existence in three dimensions, do not come to us to gossip about themselves; or the place they came from; or where they are going to; or where we are going to in the far future. They are messengers from the As-Yet-Unknown; and come to tell us where we are to go next; and the shortest road to get there; and where we ought not to go just at present. When square root of minus one comes to you, behave reasonably about him. Treat him logically, exactly as if he were six or nine; only always remember to keep well in front of you the fact of your own ignorance. You may never find out any more about him than you know now; but if you treat him sensibly he will tell you plenty of truths about your x 's and y 's, and other unknown things.

Please don't suppose that I have always behaved sensibly to angels. I have often made serious mistakes in dealing with them. I have acted in haste and have had plenty of reason to repent at leisure. But one thing they have taught me is that we need never be afraid of angels, whether white or black, as long as we keep the laws of logic. Another thing they have shown me is that angels never really gossip. They have often pretended to gossip to me; but I have found out afterwards that they have been talking clever nonsense in order to test me and prove me; so that I might see in what an illogical state of mind I have met them. Angels leave real gossip to old women who have done their life's work and have time to sit in the chimney corner and tell tales about their past experiences to their child friends.

