Zeno's paradoxes

Zeno, a philosopher of Ancient Greece, proposed a number of paradoxes which turn out to be related to infinite sums.

The Arrow Paradox
"For an object to be in motion, it must be constantly changing the position in space which it occupies. At any given instant, an arrow in flight is in only one single position. Since this is true at all possible instances of time, the arrow is therefore motionless."
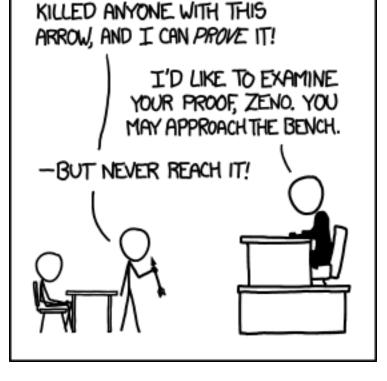
Achilles and the Tortoise
"If Achilles races a tortoise, and gives the tortoise a 100m head-start, before Achilles can overtake him he must reach the 100m mark, and by that time the tortoise will be some distance beyond. By the time Achilles reaches this new point, the tortoise will be some distance beyond still. Since this will always be the case, he can never be overtaken."

The Dichotomy of Motion
"Before a person can reach any given destination, he must first reach the halfway point, and before he reaches this, he must first get a quarter of the distance, and so on. Since this is a never-ending series of tasks, and nobody can complete an infinite number of tasks in a finite time, the person can never reach his destination."

The *conclusions* of these paradoxes are clearly false.

Can you refute the *arguments* given?

MY CLIENT COULDN'T HAVE KILLED ANYONE WITH THIS ARROW, AND I CAN *PROVE* IT!

I'D LIKE TO EXAMINE YOUR PROOF, ZENO. YOU MAY APPROACH THE BENCH.

—BUT NEVER REACH IT!