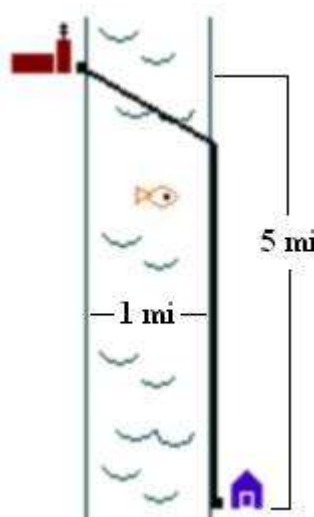


Dear Calculus Student,

My name is John Iksokmets and I am a contractor with Zapped! Electrical Systems. (For all your electric needs, go get Zapped!™) We have just been offered a contract to provide electricity to Mr. Beegshoat, a local self-made millionaire. He bought a rather old cabin in the woods, and is planning on making it into his summer cottage. Of course, he will be using a lot of electricity to run his expensive electrical gadgets, which will be good business for us.

However, there are currently no power lines running to his cottage, as it is over the river and through the woods. On the other side of the river we do have a power plant, and I have diagrammed the setup to the right, along with a possible route to run some power cables.

At Mr. Beegshoat's request, we are laying cable underground so as not to interfere with the "pristine beauty of the natural environment" (his words). The best rates we can find are from Cheepy Cable Corporation, which charges \$1000 per mile of underground cable, and \$3000 per mile of underwater cable.



Like any good business, we try to save money when possible. The good folks at Cheepy's state that the total cost to lay the cable will be \$8000:

$$(5 \text{ miles})(\$1000 / \text{mile}) + (1 \text{ mile})(\$3000 / \text{mile}) = \$8000$$

(underground)                      (underwater)

So he wants to lay the cable straight along the river to the point across from the Beegshoat cabin, then run the cable straight across under the river. When I asked if this was the least expensive way, Cheepy's CEO, Mr. Velyk, had this to say: "Of course! If we instead went right across the river at a diagonal, making a straight line with no turns, then the price would be  $\sqrt{26}$  times \$3000, which equals about \$15,297, which as you can see is much more expensive than \$8,000!" I couldn't argue with that, but I still have my doubts. Is this the least expensive way to lay the cable, or is there a better way? I would greatly appreciate your advice in this matter. Since I must make final arrangements with Mr. Velyk in the near future, I hope to hear from you soon.

Warmest regards,

*John Iksokmets*

John Iksokmets