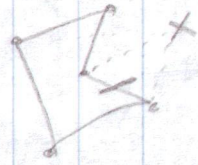
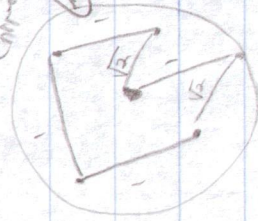
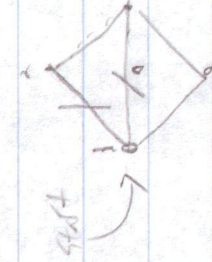


Correct



Correct

Correct

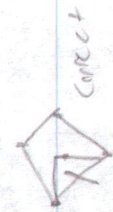


$$4 + 2\sqrt{2} = 6.82$$

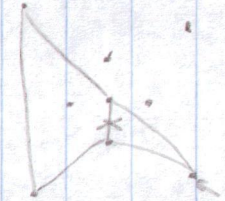
$$2 + 4\sqrt{2}$$

$$4 + 2.82 = 6.82$$

$$2 + 5.65 = 7.65$$



Correct



Proof:

base: the shortest route TSP between 2 points ~~a~~ a and b

is $a \rightarrow b \rightarrow a$.

base 2: the shortest route TSP between 3 points a, b, and c

is $a \rightarrow b \rightarrow c \rightarrow a$.

for any ~~points~~ shortest route TSP path

$$N = \{n_1, n_2, n_3, \dots\}$$

adding a point P causes the shortest path

to be a path NP , where the ends n_a and n_b are closer than and other to P.

the new shortest path is

$$N_1 = \{n_1, n_2, n_3, \dots, n_a, NP, n_b, \dots, n_n\}$$