

Directions: *Please show all of your work clearly. Full credit will only be given when work is clearly presented.*

(8 points)

1. Kenny is fly fishing in the Naknek River in Alaska. He spots a sleeping bear Southwest of him across the river of a width  $x$  feet. Being a math nerd, he pulls out a protractor and notes the angle between him and the bear is  $45^\circ$ . He walks 50 feet North (away from the bear) and measures the angle at  $30^\circ$ . What is the width of the river?

(4 points)

2. Given  $f(x) = \frac{1}{x}$ , find  $f^{-1}(x)$  and state the domain and range of both functions. Show all of your work.

(8 points)

3. Michael is running 8 mph clockwise around a circular track of radius 200 feet. He begins at the Northernmost point on the track. What is his location (in coordinates) after 45 seconds?