3.5 - Making Connections with Rational Functions

Example 1: The intensity of sound, in watts per square metre, varies inversely as the square of the distance, in metres, from the source of the sound. The intensity of the sound from a loud speaker at a distance of 2m is 0.001 W/m^2.

A) Determine a function to represent this relationship?

B) Graph this function

C) What is the effect of having the distance from the source of the sound?

Example 2: Ingrid is docking a motorboat. She turns off the power and lets the boat coast toward the dock. The distance, d, in metres, between the boat and the dock as a function of time, t, in seconds, is given by $d(t) = \frac{-7t+70}{t+4}$, $0 \leq t \leq 10$.

a) What is the average velocity of the boat during the time interval from when Ingrid turns the boat off to when it meets the dock?

b) Determine the velocity of the boat when Ingrid turns off the power, to one decimal place.

Example 3: The time, in hours, that it takes Paul to jog 5 km is inversely proportional to his average speed, in kilometers per hour.

a) Write a function to represent the time as a function of the speed.

b) If Alistair jogs at 4.5 km/h, how long does it take him to complete a 5 km run, to the nearest minute?