

Population Density Wkst

Name: _____

A Graphing Calculator is allowed for these problems.

1. A rectangular shaped city lays along side a straight river. Its population decreases as you move away from the river. The population can be estimated as $20 - 3x$ thousand per square mile.
- a) If the city is 10 miles in length along the river and 6 miles wide, then find its population.

- b) Suppose the city is semicircular in shape with a diameter of 10 miles. Find its population if
- i) the density varies as you move away from the center point along the river.

- ii) the density varies as you move away from the river.
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2. A circular oil spill has a density at r meters from its center given by $\frac{60}{1+r^2}$ kg / m².
- a) If the oil spill extends to 2000 meters in radius, then find its mass.

- b) Within what distance is half the oil slick contained?

Answers:	1a. 660,000	2a. 2865.473 kg
	1bi. 392,699	2b. 44.710 m
	bii. 535,398	