Mathematics 122

Quiz 28 Name:_____

You must show your work to get full credit.

1. The following table gives the rate that oil is leaking from a storage tank.

t = hours since leak started.	0	.5	1.0	1.5	2.0
Rate in gallons per hour	100	95	85	70	60

Assume the rate of the leakage is slowing down and compute the following

$\Delta t = .5$ $.5(100+95+85+70) = 175$

Upper bound for the number of gallons lost 175 gallons

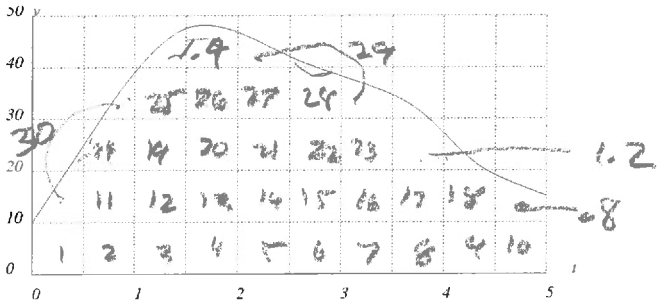
$.5(95+85+70+60) = 155$

Lower bound for the number of gallons lost 155 gallons

Best guess $= \frac{175+155}{2} = 165$

The best guess of number of gallons lost 165 gallons

2. The following is the graph of velocity in feet per second of a cheetah during a five second period.



(a) Each of the little squares has a base of $\Delta t = .5$ sec and a height of 10 ft/sec. So what does the area of one of the squares represent in terms of distance?

$\Delta t \cdot \Delta h = (.5)(10) = 5$

A square represents 5 feet

(b) What is the number of squares between the t axis and the graph (include fractions of squares).

$30 + 1.4 + 1.2 + .8 = 33.4$

The number of squares is 33.4 (very approximate)

(c) Estimate the distance traveled by the cheetah during the five second period.

The distance covers is about $(33.4) \times 5 = 167$ feet.