

Mathematics 122

Quiz #29

Name: Key

*You must show your work to get full credit.*

A tank starts with 500 gallons of water in it. At 8:00am water is pumped into it at a rate of

$$r(t) = 6(.95)^t \text{ gallons/hour}$$

where  $t$  is the number of hours since 8:00am.

(1) What are the units of  $\int_0^4 r(t) dt$ ? gallons

$$(\text{gallons/hour}) \times \text{hour} = \text{gallons}$$

(2) How many gallons of water are pumped into the tank between 10:00am and 1:00pm? 15.05682929 gallons

$$\int_2^5 r(t) dt = \text{fnInt}(6(.95)^X, X, 2, 5) = 15.056829 \text{ gallons}$$

(3) How many gallons are in the tank at 9:30am? 508.662 gallons.

$$\begin{aligned} & 500 + \int_0^{1.5} r(t) dt \\ &= 500 + \text{fnInt}(6(.95)^X, X, 0, 1.5) \\ &= 508.662 \text{ gallons} \end{aligned}$$