

# Math 1513 - College Algebra

## Written Assignment 8 - Due 2013.10.13

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Directions: Please answer the following question in complete sentences. Be sure to label all geometric objects in any illustrations. I will accept an answer in a scanned image format, as a pdf, or sent from your awesome picture phone.

Question: The surface area of a star goes through an expansion phase prior to going *supernova*. As the star begins expanding, the radius becomes a nonconstant function of time. Suppose the function is  $r(t) = 1.36t + .002$ , where  $t$  is in days and the radius  $r$  is measured in gigameters (Gm).

- (a) Find the radius of the star three days after the expansion phase begins.
- (b) Find the surface area of the star after three days.
- (c) Express the surface area as a function of time by finding  $h(t) = (S \circ r)(t)$ .
- (d) Use  $h(t)$  to compute the surface area after three days directly. Does it agree with your answer from part (b)?