Math 110, Drill 17 Professor P. H. Maserick

1. Use differentials to approximate how much the area of a circle of radius 1 foot is increased if the radius is increased by $\frac{1}{16}$ of an inch? Recall that the area y of a circle of radius x is given $y = \pi x^2$.

2. (i) Use the above to approximate the area of the circle with increased radius.
(ii) What is the exact area of the circle with increased radius?

3. Use the method of differentials to approximate $\sqrt{99}$. *Hint: Add the differential dy of* $y = \sqrt{x}$ *for* $dx = -1$ *to* $\sqrt{100}$.