

PRINT Your Name: \_\_\_\_\_

There are 10 problems on 5 pages. Each problem is worth 10 points. each. SHOW your work. **CIRCLE** your answer. **NO CALCULATORS!** CHECK your answer whenever possible.

1. Find  $\int x\sqrt{1-x} dx = -\int_{x=1-u}^{u=1-x} \sqrt{u} du = -\int \sqrt{u} (1-u)^{\frac{3}{2}} du = -\left( \frac{2}{5} u^{\frac{5}{2}} \right) + C$

$-\left( \frac{2}{5} (1-x)^{\frac{5}{2}} - \frac{2}{5} (1-x)^{\frac{5}{2}} \right) + C$

$\frac{dh}{dx}(PA) = -\left( (1-x)^{\frac{3}{2}} + (1-x)^{\frac{3}{2}} \right)$   
 $= \sqrt{1-x} (1(1-x)) \checkmark$

2. Find  $\int x\sqrt{1-x^2} dx = -\frac{1}{2} \int u^{\frac{1}{2}} du = -\frac{1}{2} \frac{2}{3} u^{\frac{3}{2}} + C = -\frac{1}{3} (1-x^2)^{\frac{3}{2}} + C$

$u = 1-x^2$   
 $du = -2x dx$

$\frac{d}{dx}(PA) = -\frac{1}{3} \frac{3}{2} (-2x) (1-x^2)^{\frac{1}{2}}$