

MTH 132 Quiz 10.

1. $a(t) = 2t^{\frac{2}{3}} + 3\sin t$

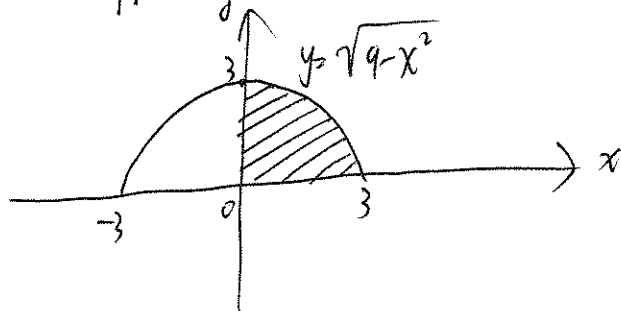
$v(t) =$ antiderivative of $a(t) = 2 \cdot \frac{3}{5} \cdot t^{\frac{5}{3}} + 3(-\cos t) + C$
 $= \frac{6}{5}t^{\frac{5}{3}} - 3\cos t + C$

$v(0) = 1 \Rightarrow 0 - 3 + C = 1 \Rightarrow C = 4$

so $v(t) = \frac{6}{5}t^{\frac{5}{3}} - 3\cos t + 4$

2. $I = \int_0^3 |y(x)| dx$ where $y(x) = \sqrt{9-x^2}$ ($x^2+y^2=3^2$)

so $|y(x)|$ is the upper part of the circle $x^2+y^2=3^2$



And I corresponds to the area bounded between $|y(x)|$ and $y=0$ from 0 to 3, viz. the shadow region.

so $I = \frac{1}{4}(\pi \cdot 3^2) = \frac{9}{4}\pi$