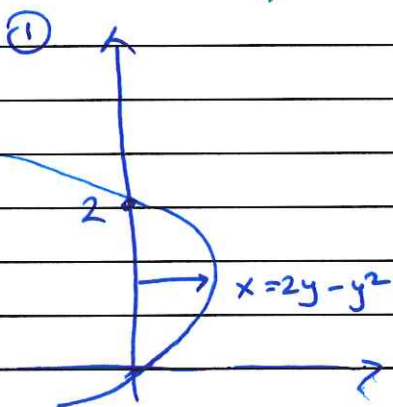


Quiz 40 | AP CALCULUS AB | 2014-2015 | SHUBLEVA.



$$\int_0^2 2y - y^2 dy = \left( y^2 - \frac{y^3}{3} \right) \Big|_0^2 = 2^2 - \frac{8}{3} = \frac{4}{3} \text{ s.u.}$$

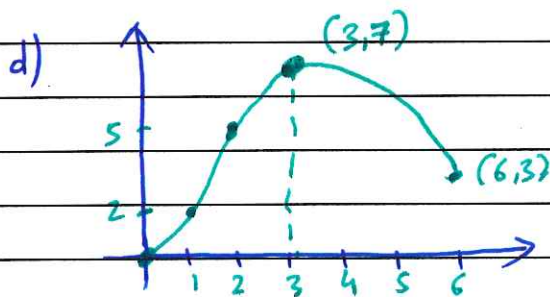
②

$$\int_0^1 \frac{4}{t^2+1} dt = 4 \int_0^1 \frac{1}{t^2+1} dt = 4 \arctan t \Big|_0^1 = 4(\arctan 1 - 0)$$

$$= 4 \cdot \frac{\pi}{4} = \pi.$$

③ a)  $g(0) = 0$       $g(6) = 3$      b)  $g'(x) = f(x)$   
 $g(1) = 2$       $g \uparrow$  when  $g' > 0$  (i.e.  $f > 0$ )  
 $g(2) = 5$      So,  $g$  increases on  $(0, 3)$   
 $g(3) = 7$

c)  $g$  has a local and global max. @  $x=3$   
 ( $g'$  changes from  $+$  to  $-$  @  $x=3$ )  
 and this is the only sign change.



4)

$$\int_0^{\pi/2} \cos x \sin(\sin x) dx = \int_{u(0)}^{u(\pi/2)} \sin u du = \int_0^1 \sin u du =$$

$$u = \sin x \quad du = \cos x dx$$

$$= - \int_0^1 \sin u du = -\cos u \Big|_0^1 =$$

$$= -\cos 1 - (-\cos 0)$$

$$= 1 - \cos 1.$$