

Name: Richard10
10

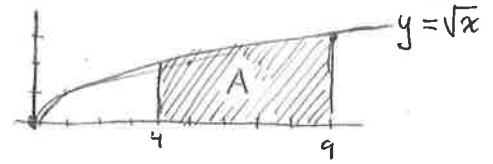
MATH 200 - QUIZ 14

April 23, 2015

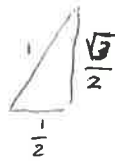
1. Find the area under the graph of
- $y = \sqrt{x}$
- between
- $x = 4$
- and
- $x = 9$
- .

$$A = \int_4^9 \sqrt{x} \, dx = \int_4^9 x^{\frac{1}{2}} \, dx = \left. \frac{1}{\frac{1}{2}+1} x^{\frac{1}{2}+1} \right|_4^9$$

$$= \left. \frac{2}{3} x^{\frac{3}{2}} \right|_4^9 = \left. \frac{2}{3} \sqrt{x}^3 \right|_4^9 = \frac{2}{3} \sqrt{9}^3 - \frac{2}{3} \sqrt{4}^3 = \frac{2}{3} 3^3 - \frac{2}{3} 2^3 = \frac{54}{3} - \frac{16}{3} = \frac{38}{3} \text{ square units}$$



$$2. \int_0^{\pi/3} \sec^2(x) \, dx = \tan(x) \Big|_0^{\pi/3} = \tan \frac{\pi}{3} - \tan 0 = \sqrt{3} - 0 = \boxed{\sqrt{3}}$$

Name: Richard10
10

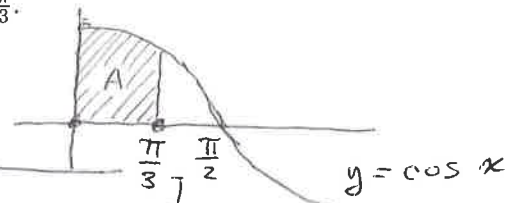
MATH 200 - QUIZ 14

April 23, 2015

1. Find the area under the graph of
- $y = \cos(x)$
- between
- $x = 0$
- and
- $x = \frac{\pi}{3}$
- .

$$A = \int_0^{\pi/3} \cos(x) \, dx = \sin(x) \Big|_0^{\pi/3}$$

$$= \sin\left(\frac{\pi}{3}\right) - \sin(0) = \frac{\sqrt{3}}{2} - 0 = \boxed{\frac{\sqrt{3}}{2} \text{ square units}}$$



$$2. \int_4^{16} \sqrt{x} \, dx = \int_4^{16} x^{\frac{1}{2}} \, dx = \left. \frac{1}{\frac{1}{2}+1} x^{\frac{1}{2}+1} \right|_4^{16} = \left. \frac{1}{\frac{3}{2}} x^{\frac{3}{2}} \right|_4^{16} = \left. \frac{2}{3} \sqrt{x}^3 \right|_4^{16}$$

$$= \frac{2}{3} \sqrt{16}^3 - \frac{2}{3} \sqrt{4}^3 = \frac{2}{3} 4^3 - \frac{2}{3} 2^3 = \frac{2}{3} (4^3 - 2^3)$$

$$= \frac{2}{3} (64 - 8) = \frac{2}{3} 56 = \boxed{\frac{112}{3}}$$