

Problem Set 64

2a. $2x\sqrt{9-x^2}$

b. $3\sqrt{2}$ units \times $\frac{3\sqrt{2}}{2}$ units

4. maximum: 2
minimum: -30

6. maximum: 10
minimum: 2

8. $y' = \frac{-1}{\sqrt{25-x^2}}$

10. $\arcsin x + C$

12. $a = 3;$ $b = 2$

14. $\frac{16}{3}$ units²

16. 1

18. $-\frac{1}{4}$

20.
$$\frac{2 \cos(2x) + 1}{3 \sqrt{[\sin(2x) + x]^2}} - \frac{3 \csc(3x) \cot(3x)}{x^3 + 1} - \frac{3x^2 \csc(3x)}{(x^3 + 1)^2}$$

22. 0

24a. $y = \sqrt{b^2 - \left(\frac{b}{a}\right)^2 x^2}$, where $x > 0$

b. $\int_0^a \sqrt{b^2 - \left(\frac{b}{a}\right)^2 x^2} dx$