

Assignment: Area under the curve

Date _____

For each problem, find the area under the curve over the given interval.

1) $y = \sqrt{x}$; [3, 5]

2) $y = \frac{2}{x}$; [2, 6]

3) $y = -\frac{5}{x}$; [-5, -2]

4) $y = \sqrt{x}$; [2, 7]

5) $y = \frac{x^2}{2} + 3x + \frac{13}{2}$; [-4, 1]

6) $y = \frac{x^2}{2} - 4x + 10$; [4, 5]

7) $y = \frac{3}{x^2}$; [-3, -1]

8) $y = \frac{4}{x^2}$; [-4, -2]

9) $y = \cos x$; $[-\frac{\pi}{3}, \frac{\pi}{6}]$

10) $y = -\sec x \tan x$; $[-\pi, -\frac{5\pi}{6}]$

Answers to Assignment: Area under the curve

$$1) \frac{2(-3\sqrt{3} + 5\sqrt{5})}{3} \approx 3.989$$

$$2) 2 \ln 6 - 2 \ln 2 \approx 2.197$$

$$3) -5 \ln 2 + 5 \ln 5 \approx 4.581$$

$$4) \frac{2(7\sqrt{7} - 2\sqrt{2})}{3} \approx 10.461$$

$$5) \int_{-4}^1 \left(\frac{x^2}{2} + 3x + \frac{13}{2} \right) dx \\ = \frac{125}{6} \approx 20.833$$

$$6) \int_4^5 \left(\frac{x^2}{2} - 4x + 10 \right) dx \\ = \frac{13}{6} \approx 2.167$$

$$7) \int_{-3}^{-1} \frac{3}{x^2} dx \\ = 2$$

$$8) \int_{-4}^{-2} \frac{4}{x^2} dx \\ = 1$$

$$9) \int_{-\frac{\pi}{3}}^{\frac{\pi}{6}} \cos x dx \\ = \frac{1 + \sqrt{3}}{2} \approx 1.366$$

$$10) \int_{-\pi}^{-\frac{5\pi}{6}} -\sec x \tan x dx \\ = \frac{-3 + 2\sqrt{3}}{3} \approx 0.155$$

