

AP Calculus 5-1 to 5-3 Review Problems

1. Suppose $f(x) = \int_{-2}^x x^2 + 1 \, dx$, find the Riemann sum with $n = 6$ by:
 a. left endpoints b. right endpoints c. midpoints d. trapezoids e. exact answer

2. Evaluate each:

a. $\int_{-1}^8 \sqrt[3]{x^2} \, dx$

b. $\int_{-2}^5 7 \, dx$

c. $\int_0^3 (x^2 + 2x + 5) \, dx$

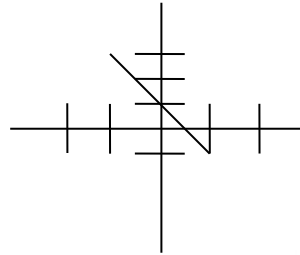
d. $\int_{\pi}^{2\pi} \tan \theta \, d\theta$

3. p. 321 2, 3

4. Find the exact area under $y = x + 4$ on the interval $[2, 6]$.

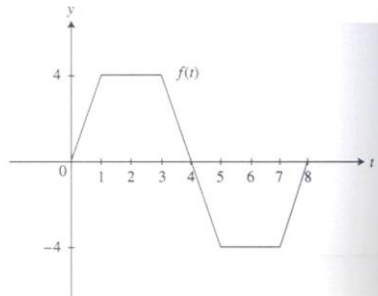
5. Find the exact area bounded by the x-axis and $y = \sqrt{4 - x^2}$

6. Write the integral for the following:



7) Let $F(x) = \int_0^x f(t) \, dt$ and the graph of f is shown.

- a) Evaluate: $F(0)$, $F(1)$ and $F(4)$
 b) Evaluate: $F(5)$, $F(7)$, $F(8)$
 c) At what value of t does F have a maximum value?
 d) On what interval(s) is F decreasing?
 e) Draw a sketch of the graph of F .



Answers:

1. a) 145 b) 205 c) 173.5 d) 175 e) 174

2. a) $93/5$ b) 49 c) 33 d) undefined

3. 2) a) $0, 1/2, 0, -1/2, 0, \frac{1}{12}, 4\frac{1}{2}$ b) ≈ 6 c) min @ 3 d) max @ 7 d)

4. 32

5. 2π 6. $\int_{-1}^2 (-2x + 1) \, dx$

7. a) 0, 2, 12 b) 10, 2, 0 c) $t = 4$ d) (4, 8) e)

