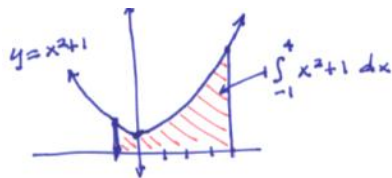


**Riemann Sums and the Definite Integral**



- 1.
2. -
  - a. 13
  - b. -10
  - c. -26
  - d. 0
3. -
  - a. -4
  - b. -4
  - c. 3
  - d. -2
4. -
  - a. -pi
  - b. -1-2pi
  - c. 3-2pi
  - d. 23-2pi
5. -
  - a. 8
  - b. 4/3
6. -
  - a. 100
  - b. 72.5
  - c. At 2:30 there were 105 people
7. -
  - a. 6600 gal
  - b. 6675 gal
8. -
  - a. 18
  - b. 9
  - c.  $\frac{\pi^2}{8} - 1$
9. 22,000 m
10. -
  - a. 21/6
  - b. 9/2
11.  $f(x) = \frac{1}{4}x^4 - \frac{3}{2}x^2 + x + 4$
12. -
  - a. 0
  - b. -pi
  - c. pi

- d.  $-\pi + 9/2$
- e. 2
- f.  $y - \left(\frac{9}{2} - \pi\right) = 3(x - 5)$
- g. dne
- h. 1
- i.  $(-2, 0)$
- j.  $(2, 5)$

13. -
  - a.  $g(0) = 4.5, g'(0) = 1$
  - b. Since  $g' = f$ , the relative maximum is at  $x = 3$ , where  $f$  switches from positive to negative.
  - c. Race Em!! (endpoints and relative extrema)
 
$$g(4) = \int_{-3}^4 f(x) dx = 6\frac{1}{2} - \frac{1}{2}\pi$$

$$g(-4) = \int_{-3}^{-4} f(x) dx = -1$$

$g(-4) = -1$  is the absolute minimum/

$$g(-5) = \int_{-3}^{-5} f(x) dx = 0$$
  - d. Since  $g'' = f'$ , points of inflection occur when  $f$  switches slope;  $x = -3, 1, 2$



Thanks for checking your answers!!

