

Key

Quiz 2

This is a two-stage quiz. During the first stage, use your knowledge & calculator. You have 15 min. In the second stage, you are now welcome to use your books, notes, and students in the class to retake the same quiz. You have the remainder of the quiz time to write one solution (with everyone's name on it!!!) to be turned in for the group.

Show *all* your work. Reasonable supporting work must be shown for any partial credit.

1. [2] Find $\int \cos(x) + \frac{1}{\sqrt[3]{x}} dx$. = $\int \cos(x) dx + \int x^{-1/3} dx$ (1.5)

= $\sin(x) + \frac{3}{2} x^{2/3} + C$
 (1.5) (1.5) (1.5)

Check: $[\sin(x)]' = \cos(x)$
 $[\frac{3}{2} x^{2/3}]' = \frac{3}{2} \cdot \frac{2}{3} x^{-1/3} = \frac{1}{\sqrt[3]{x}}$

2. [2] Expand $\sum_{i=4}^7 \frac{2i}{(-1)^i \cdot 3}$

$\frac{2(4)}{(-1)^4 \cdot 3} + \frac{2(5)}{(-1)^5 \cdot 3} + \frac{2(6)}{(-1)^6 \cdot 3} + \frac{2(7)}{(-1)^7 \cdot 3}$

Start @ 4 (1.5)
 end @ 7 (1.5)
 sum (1.5)
 sum (1.5)

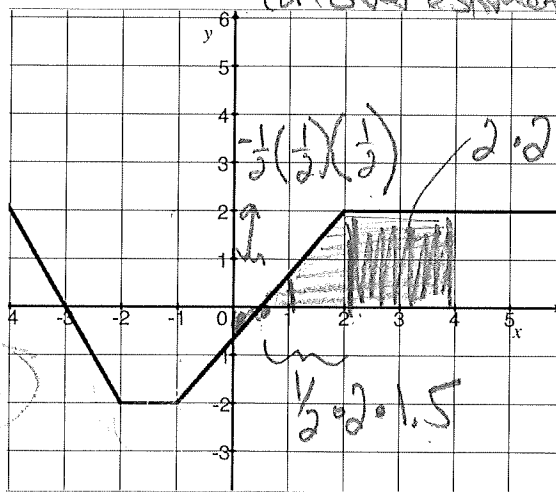
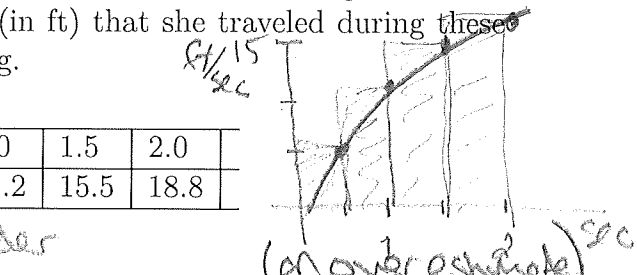
3. [3] The speed of a runner was measured at half-second intervals and is given in the table below. Find an estimate for the distance (in ft) that she traveled during these ~~three~~ seconds and provide work and/or reasoning.

Time (s)	0	0.5	1.0	1.5	2.0
Velocity (ft/s)	0	5.7	11.2	15.5	18.8

We need to estimate the area under the curve which is measured in ft/sec * sec or ft, using 4 rect.

$\frac{1}{2}(5.7) + \frac{1}{2}(11.2) + \frac{1}{2}(15.5) + \frac{1}{2}(18.8) =$

4. The graph of f is shown on the right. Let $g(x) = \int_0^x f(t) dt$



(a) [1] Find $g(4)$. (1.5)

$g(4) = \int_0^4 f(t) dt = \text{signed shaded area} = 4 + \frac{3}{2} - \frac{1}{8}$
 area (1.5)

(b) [2] Find $g'(4)$.

$g'(4) = \frac{d}{dx} \left(\int_0^x f(t) dt \right) \Big|_{x=4}$ notation (1.5)

= $f(x) \Big|_{x=4} = f(4) = \frac{1}{2}$ (1.5)

by FTC I (1.5)