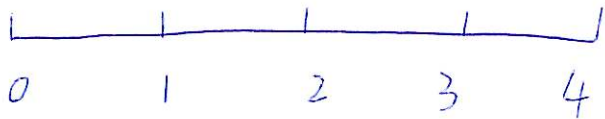
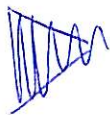


4.6 #3



$$y(0) = 1$$

$$y(1) = \frac{1}{2}$$



$$y(2) = \frac{1}{5}$$

$$y(3) = \frac{1}{10}$$

$$y(4) = \frac{1}{17}$$

$$T_4 = \frac{1}{2} \left[1 + \frac{1}{17} + 2 \left(\frac{1}{2} + \frac{1}{5} + \frac{1}{10} \right) \right]$$

$$= 1.3294 \checkmark$$

#5

$y(0) = 0, y(4) = 0, y(1) = 0, y(2) = 0, y(3) = 0$

$$f(x) = \frac{x}{14} \sin\left(\frac{x}{14}\right)$$

~~$$T_{14} = \frac{14}{2} \left[y(0) + \frac{y(1)}{14} + 2 \sum_{i=1}^{n-1} i \sin(i) \right]$$~~

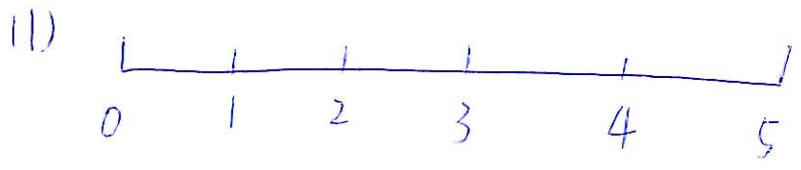
~~$$= 8.4492 \times \frac{1}{28}$$~~

~~$$= 0.3018$$~~

$$T_{14} = \frac{1}{28} \left[0 + \sin(1) + 2 \sum_{i=1}^{13} \frac{i}{14} \sin\left(\frac{i}{14}\right) \right]$$

$$= \frac{1}{28} \left[\sin(1) + 2 \sum_{i=1}^{13} \frac{i}{14} \sin\left(\frac{i}{14}\right) \right]$$

#13



$$T_5 = \frac{1}{2} \left[y(0) + y(5) + 2 \sum_{i=1}^4 y(i) \right]$$

$$= \frac{1}{2} \left[0 + 5^{3/2} + 2 \sum_{i=1}^4 i^{3/2} \right]$$

$$= 22.61475 \checkmark$$

$$(2) \int_0^5 x^{3/2} dx$$

$$= \frac{2}{5} \cdot x^{5/2} \Big|_0^5 = 22.3607 \checkmark$$

~~4.7 #1~~

4.7 #2 $(2x^2 - 80x + 122) - (-4x^2 - 2x - 10)$

$$= 2x^2 - 80x + 122 + 4x^2 + 2x + 10$$

$$= 6x^2 - 78x + 132$$

$$= 6(x^2 - 13x + 22)$$

$$= 6(x-2)(x-11)$$

~~the~~ The two parabolas meet @ $x=2, x=11$.

$$\left| 6 \int_2^{11} (x^2 - 13x + 22) dx \right| = \left| 6 \left[\frac{x^3}{3} - \frac{13x^2}{2} + 22x \right]_2^{11} \right| = \frac{729}{4} = 182.25$$

3

$$\#6 \quad \sqrt{x} = 8x \Rightarrow x=0, x = \frac{1}{64}$$

$$\int_0^{\frac{1}{64}} (x^{\frac{1}{2}} - 8x) dx$$

$$= \left[\frac{2}{3} \cdot x^{\frac{3}{2}} - 4x^2 \right]_0^{\frac{1}{64}}$$

$$= 0.0003255$$

$$\#11 \quad x=0 \Rightarrow y=0, y=16$$

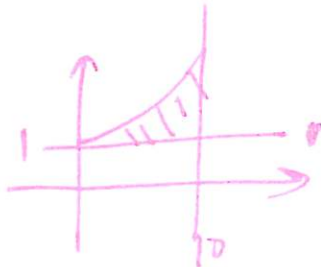
$$\int_0^{16} \frac{y^2 - 16y}{-10} dy$$

$$= -\frac{1}{10} \left[\frac{y^3}{3} - 8y^2 \right]_0^{16}$$

$$= 68.2667$$

#18.

$$\int_0^{10} (e^x - 1) dx$$



$$= [e^x - x]_0^{10} = (e^{10} - 10) - (1 - 0) = e^{10} - 11$$

$$= 22015.47$$