

Approximate Using Trapezoids

1. Answer the following given the graph :

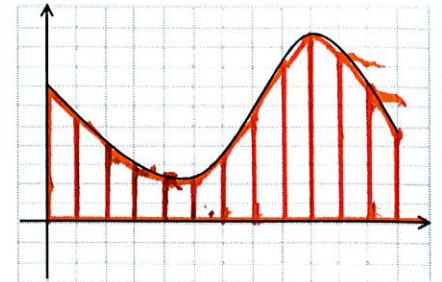
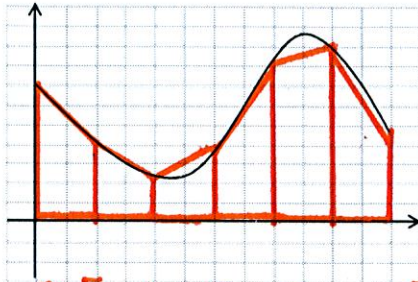
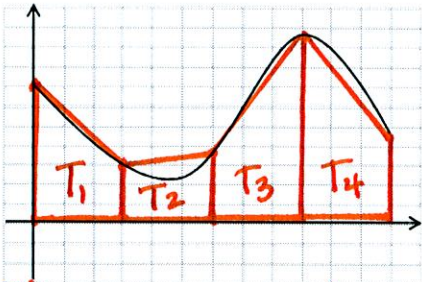
A. T_4

B. T_6

$h = \frac{12-0}{6} = 2$

C. T_{12}

$h = \frac{12-0}{12} = 1$



$\frac{3}{2} [7+3+3+3.5+3.5+9.5+9.5+4.8] = 65.7$

$\frac{2}{2} [7+4.2+4.2+2.3+2.3+3.7+3.7+8+8+9+9+4.7] = 66.1$

$\frac{1}{2} [7+5.5+5.5+4.2+4.2+3+3+2.3+2.3+2.3+2.3+3.7+3.7+6+6+8.2+8.2+9.5+9.5+9+9+4.7+4.7] = 66.55$

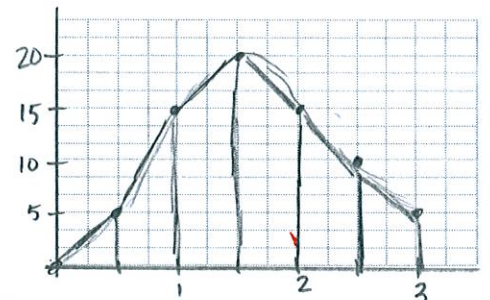
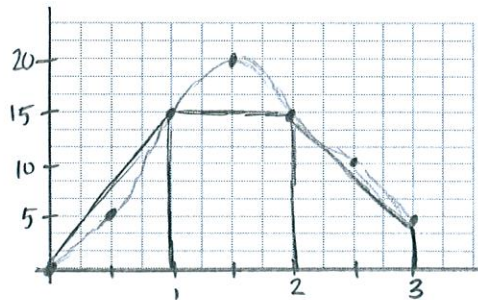
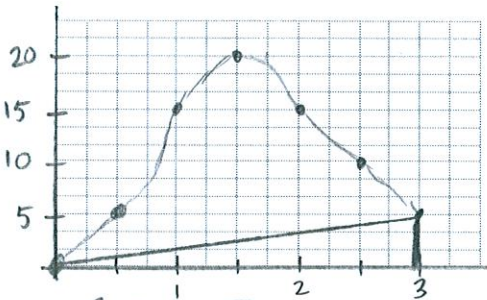
2. Answer the following given the table

t(s)	0	.5	1	1.5	2	2.5	3
v(ft./s)	0	5	15	20	15	10	5

A. T_1

B. T_3

C. T_6



$\frac{3}{2} [0+5] = 7.5$

$\frac{1}{2} [0+15+15+15+15+5] = 32.5$

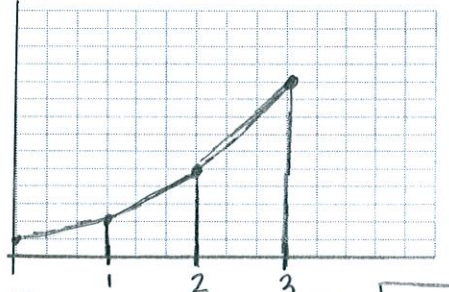
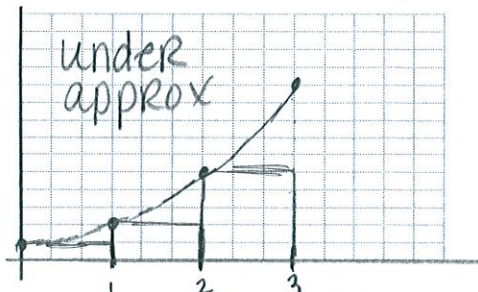
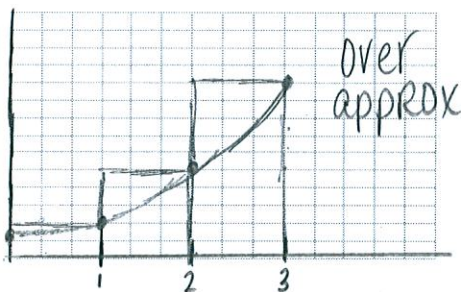
$\frac{5}{2} [0+5+5+15+15+20+20+15+15+10+10+5] = 33.75$

3. Let $f(x) = x^2 + 1$, $[0, 3]$

A. R_3

B. L_3

C. T_3

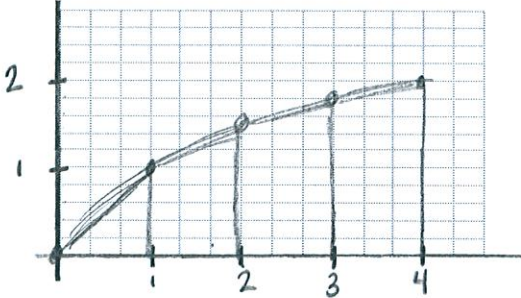


$1(2+5+10) = 17$

$1(1+2+5) = 8$

$\frac{1}{2} [1+2+2+5+5+10] = 12.5$

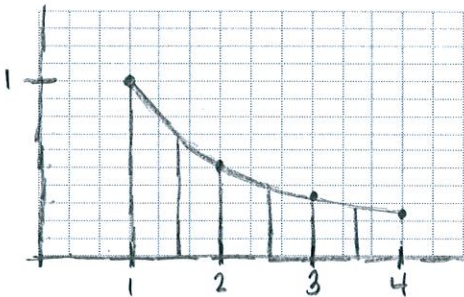
4. $\int_0^4 \sqrt{x} dx$, T_4 $f(x) = \sqrt{x}$ $[0, 4]$ $h = \frac{4-0}{4} = 1$



$$\frac{1}{2} [0 + 1 + 1 + 1.41421 + 1.41421 + 1.73205 + 1.73205 + 2]$$

$$\boxed{5.1463}$$

5. $\int_1^4 \frac{dx}{x}$, T_6 $h = \frac{4-1}{6} = .5$

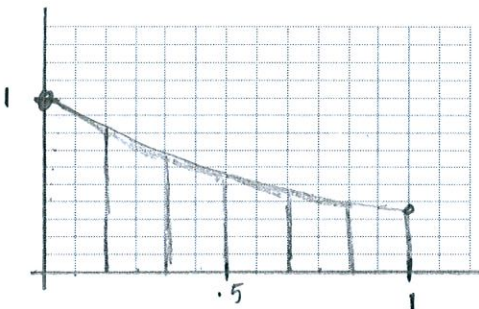


$$\frac{.5}{2} [f(1) + f(1.5) + f(1.5) + f(2) + f(2) + f(2.5) + f(2.5) + f(3) + f(3) + f(3.5) + f(3.5) + f(4)]$$

$$.25 [1 + .\bar{6} + .\bar{6} + .5 + .5 + .4 + .4 + .\bar{3} + .\bar{3} + .285714 + .285714 + .25]$$

$$\boxed{1.4054}$$

6. $\int_0^1 e^{-x^2} dx$, T_6 $h = \frac{1-0}{6} = \frac{1}{6}$



$$\frac{\frac{1}{6} \cdot \frac{1}{2} = \frac{1}{12}}{\frac{1}{6}} \left[f(0) + f\left(\frac{1}{6}\right) + f\left(\frac{1}{6}\right) + f\left(\frac{2}{6}\right) + f\left(\frac{2}{6}\right) + f\left(\frac{3}{6}\right) + f\left(\frac{3}{6}\right) + f\left(\frac{4}{6}\right) + f\left(\frac{4}{6}\right) + f\left(\frac{5}{6}\right) + f\left(\frac{5}{6}\right) + f(1) \right]$$

$$\frac{1}{8} [1 + .9726 + .9726 + .89484 + .89484 + .7788 + .7788 + .64118 + .64118 + .49935 + .49935 + .36788]$$

$$\boxed{1.1177}$$