Pre-AP Precalculus
Assignment 1.2 – Particle Motion

Each table shows the velocity, $v(t)$ of a particle at time t. Make sure you describe each of your answers in words. All of the graphs are templates for you to use to graph on your own given, separate graph paper.

t (sec)	0	2	4	6	8	10	12	14	16	18	20
$V(t)$ (m/s)	0	2	3	6	0	-1	-3	-6	-2	2	4

SOLVE, THEN WRITE IN WORDS DESCRIBING THE PROBLEM

1] $V(4) =$ 2] $V(14) =$ 3] $V(?) = 0$

4] $V(?) = 2$ 5] WHERE IS THE FUNCTIONS VELOCITY INCREASING?
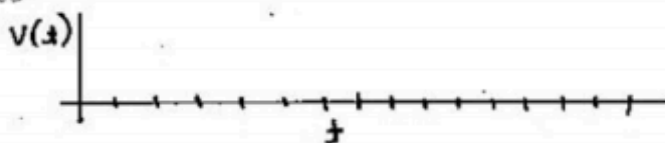
6) AVERAGE RATE OF CHANGE $4 \le t \le 12$

7] AVERAGE RATE OF CHANGE $0 \le t \le 20$

8] AVERAGE RATE OF CHANGE @ $t = 7$

9] AVERAGE RATE OF CHANGE @ $t = 15$

10] BETWEEN WHAT 2 SECOND INTERVAL IS THE VELOCITY INCREASING THE MOST?

11] GRAPH THE TABLE USING t (sec) AS THE X-AXIS AND $V(T)$ ON THE Y-AXIS.

$V(t)$

12] BETWEEN WHAT 2 SECOND INTERVAL IS THE VELOCITY INCREASING THE LEAST?
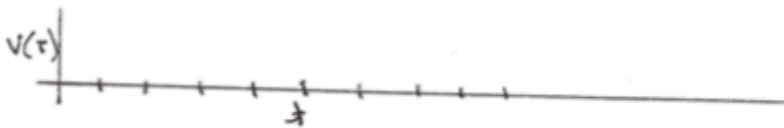
13] AT WHAT TIMES IS THE PARTICLE AT REST?

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THE FOLLOWING TABLE SHOWS THE VELOCITY OF A PARTICLE ALONG THE X-AXIS

t (sec)	0	2	4	6	8	10	12	14	16	18	20
$V(t)$ (m/s)	0	-1	-4	-2	0	1	3	6	2	1	0

1] $V(4) =$

2] $V(14) =$

3] $V(?) = 1$

4] $V(?) = 0$

5] WHERE IS THE FUNCTIONS VELOCITY INCREASING?

6] AVERAGE RATE OF CHANGE $4 \le t \le 14$

7] AVERAGE RATE OF CHANGE $10 \le t \le 18$

8] AVERAGE RATE OF CHANGE @ $t = 11$

9] AVERAGE RATE OF CHANGE @ $t = 3$

10] BETWEEN WHAT 2 SECOND INTERVAL IS THE VELOCITY INCREASING THE MOST?

11] GRAPH THE TABLE USING t (SEC) AS THE X-AXIS AND $V(T)$ ON THE Y-AXIS
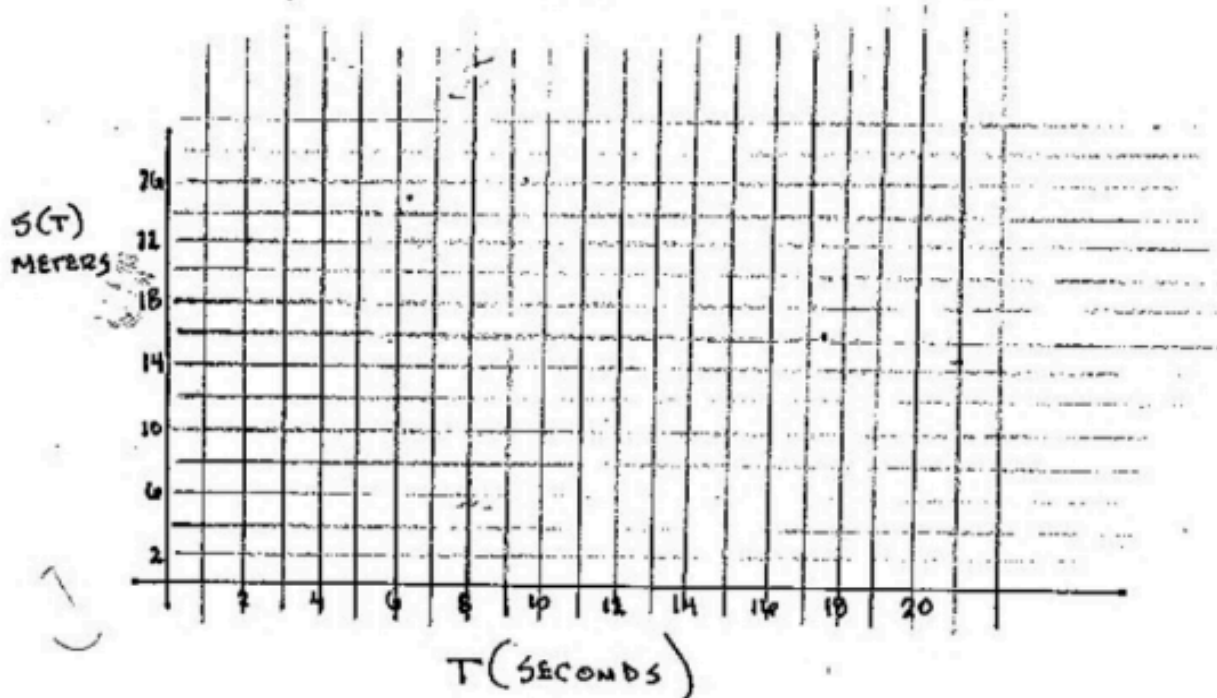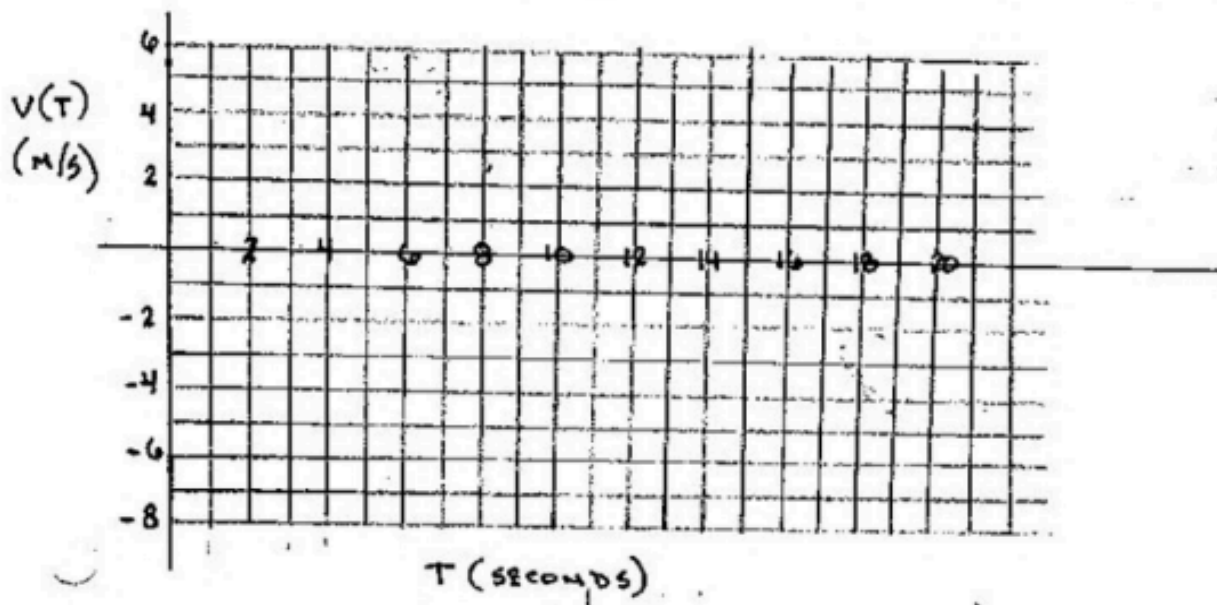

12] AT WHAT TIMES IS THE PARTICLE AT REST

13] USING THE GRAPH IN PROB. 11 ... GRAPH THE DISTANCE (DISPLACEMENT) OF THE PARTICLE

14] WHEN IS THE PARTICLE FURTHEST AWAY FROM THE ORIGIN?

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Answer the questions on page 4 using this data on page 3.

T (sec)	0	3	5	9	11	13	15	18	19	20
V(T) (m/s)	4	4	2	0	-8	-2	0	6	4	0

V(T) (m/s) vs. T (seconds)

S(T) METERS vs. T (seconds)

1) $V(11) =$ 2) $V(4) = 6$ 3) $V(5) =$

4) WHERE IS THE VELOCITY INCREASING?
   (IN WHAT INTERVAL)

5) AT WHAT TIME(S) DOES THE PARTICLE CHANGE DIRECTIONS?

6) AVERAGE RATE OF CHANGE $9 \le T \le 19$

7) AVERAGE RATE OF CHANGE $11 \le T \le 18$

8) AVERAGE RATE OF CHANGE @ $T = 4$

9) AVERAGE RATE OF CHANGE @ $T = 12$

10) BETWEEN WHAT INTERVAL IS THE VELOCITY INCREASING THE MOST?

11) BETWEEN WHAT INTERVAL IS THE ACCELERATION EQUAL TO ZERO

12) AT WHAT TIME IS THE PARTICLE FURTHEST FROM THE ORIGIN?

13) HOW MANY TIMES IS THE PARTICLE 12 METERS FROM THE ORIGIN?

14) IN WHAT INTERVAL(S) IS THE PARTICLES SPEED INCREASING?

15) AT WHAT TIME(S) IS THE PARTICLE AT REST?