

SM2H 1.6 answers 2019-2020

Work must be shown (show how you got the slope for each runner) on A-E for full credit.

A. They are the same.

B. Runner B

C. Runner A

D. They are the same.

E. Runner A wins the race because if you look at the graph, he reaches 400 meters in about 38 seconds.

Whereas, Runner B reaches 400 meters at 50 seconds.

1. 0

2. $-\frac{1}{3}$

3. -4

4. $-\frac{7}{3}$

5. 4

6. -3

7. 3

8. 3

9. 0

10a. 75 beetles per week

10b. 155 beetles per week

10c. from 0 to 5 weeks has the higher growth rate since there are continually more beetles to proliferate.

11a. 9.6 meters per second

11b. 0 meters per second

11c. -7.2 meters per second

11d. The first 3 seconds has the greater average rate of change. This is because the rockets use the first initial blast to push itself away from earth's gravity. The higher it gets the less engine power and the more gravity pulls on the rocket.

12. 1.55

13. 4

14. -4

15. -3

16. 0

17. $-\frac{7}{3}$

18a. Domain for Earth: [0, 5.5] Domain for Saturn: [0, 5 seconds]

18b. Range for Earth: [1, 37.9 meters], Range for Saturn: [0, 34 meters]

18c. The highest point on the Earth is 37.9 meters. The highest point on Saturn is 34 meters. Since Saturn is lower than the Earth, the Earth is higher.

18d. Saturn. Saturn reaches its highest point in 2.5 seconds while earth reaches the maximum at 3 sec.

18e. Earth at 12.3 m/sec. Saturn is 11 m/sec for the first three seconds. *must show work

18f. Earth at 2.5 m/sec and the rate of change at that time on Saturn is constant. *must show work

18g. Earth (still in the air at 5.5 Sec) and because it has less gravity to pull the rocket down faster than Saturn's gravity.

18h. Saturn because it hit the ground at 5 sec. Earth is still in the air at 5.5 seconds.

*Work must be shown. No credit will be given for problems without work.