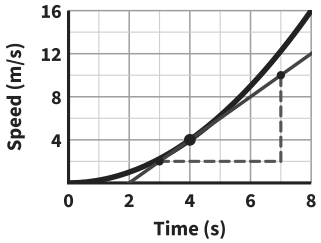
The gradient of a curve

1

Find the acceleration at 4 seconds.



change up = 8

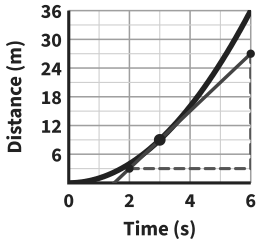
change across = 4

rate =

Acceleration _____ m/s²

2

Find the speed at 3 seconds.



change up = 24

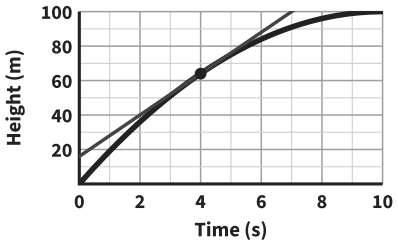
change across =

rate =

Speed _____ m/s

3

Draw a big triangle on the tangent. Find how fast the ball is rising at 4 seconds.



change up =

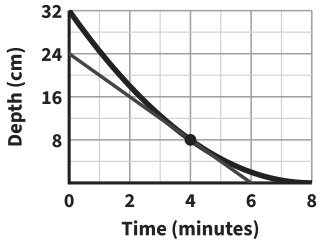
change across =

rate =

Speed _____ m/s

4

Water drains from a sink. Find how fast the depth is falling at 4 minutes.



change up =

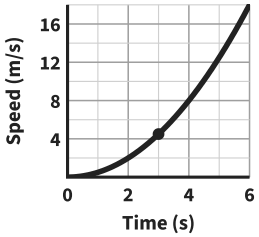
change across =

rate =

Falling at _____ cm per minute

5

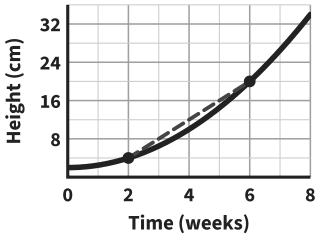
Draw a tangent at 3 seconds. Estimate the acceleration at 3 seconds.



Acceleration _____ m/s²

6

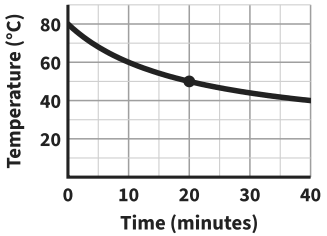
A sunflower grows. Use the dashed chord to find its average rate of growth between 2 and 6 weeks.



Average rate _____ cm per week

7

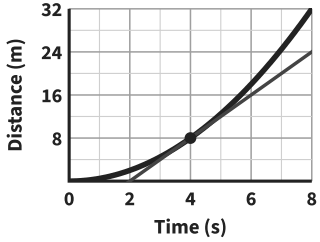
Soup cools in a bowl. Draw a tangent at 20 minutes. Estimate how fast it is cooling then.



Cooling at _____ °C per minute

8

Ravi wants the speed at 4 s. He works out 8 ÷ 4 = 2 m/s. Explain his mistake, then find the speed.

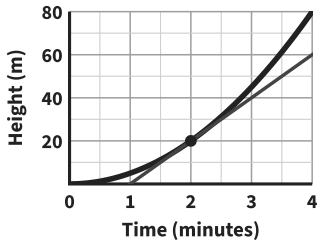


Speed _____ m/s

The gradient of a curve *further practice*

9

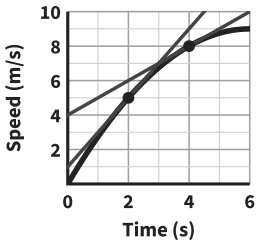
A balloon rises. The tangent at 2 minutes is drawn. Find how fast the balloon is rising then.



Rate _____

10

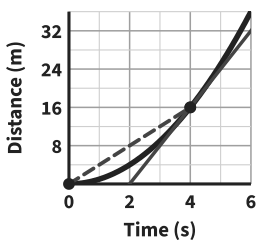
A sprinter's speed, with tangents at 2 s and 4 s. How many times greater is her acceleration at 2 s than at 4 s?



Answer _____

11

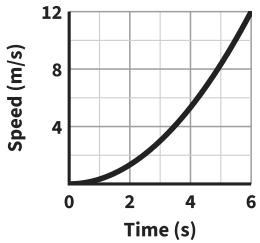
A car starts from rest. Find its average speed over the first 4 s (the chord) and its speed at 4 s (the tangent).



Answer _____

12

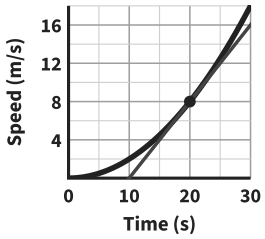
A van's speed is shown. Is its acceleration getting bigger or smaller? Explain how you know.



Reason _____

13

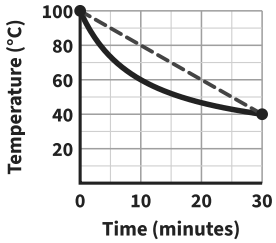
The tangent at 20 s is drawn. Find the acceleration at 20 s. Watch the scales.



Answer _____

14

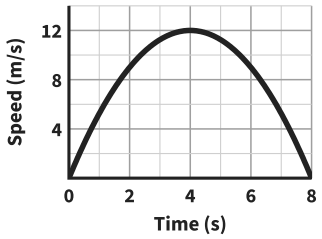
An oven cools. Use the chord to find the average rate it cools over 30 minutes. Estimate when it is cooling at exactly this rate.



Answer _____

15

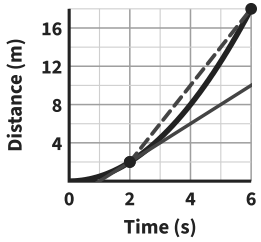
A lift's speed is shown. At what time is its acceleration zero? What is its speed then?



Answer _____

16

The tangent at 2 s and the chord from 2 s to 6 s are drawn. Which gives the greater speed? Explain, then check.



Answer _____