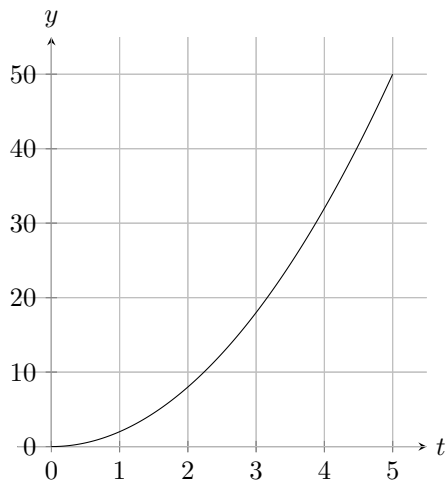


1. A ball is falling down a ramp, as shown on the picture below, following the equation $y = 2t^2$, where $0 \leq t \leq 5$ is seconds and y is the number of feet travelled down the ramp.

(a) What is the overall velocity of the ball during the first five seconds?

(b) What is the exact velocity at $t = 3$ seconds?

(c) What is the acceleration of the ball at $t = 3$ seconds? What about at all time between 0 and 5 seconds?



2. It cost

$$c(x) = 25 + 16x - 0.04x^2$$

dollars for a restaurant to produce x burgers.

(a) What is the exact cost of producing the 101st burger?

(b) How can you use derivatives to approximate the cost of the 101st burger? What do you need to calculate to make this approximation?

(c) Graph the function in Desmos, what x interval make this model plausible?