

Name: _____

7.1 Graphing the First Derivative

Exercise 7.1.1 Supply the words or phrases that correctly complete each of the following sentences.

- Over the interval where f' is negative, f is _____
- Over the interval where f' is positive, f is _____
- Over the interval where f' is increasing, f is _____
- Over the interval where f' is decreasing, f is _____

Exercise 7.1.2 The graph of a function, g , is given below. Organize where the function is increasing, decreasing, concave up, concave down, and linear. Use that information to then graph the function $y = g'(x)$.

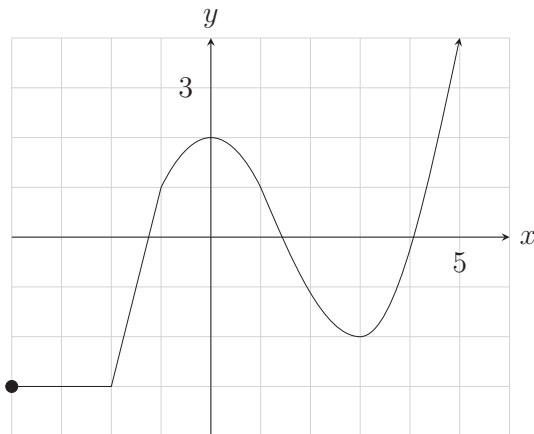
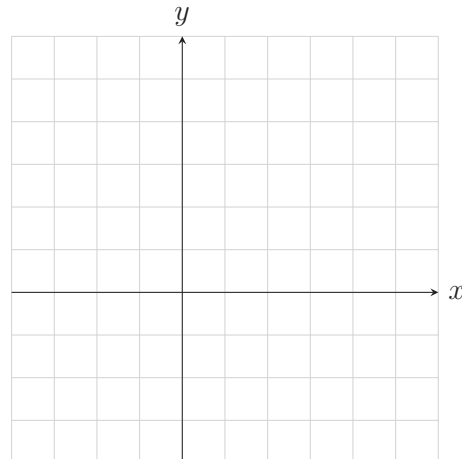


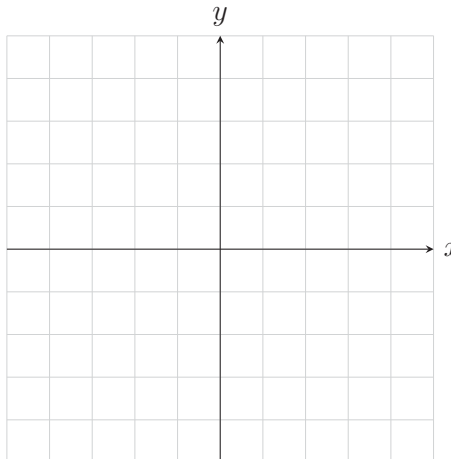
Figure 7.1.1: $y = g(x)$



7.2 Using Information About the Derivative in Graph Construction

Exercise 7.2.1 Draw a function, f , onto the coordinate plane which satisfies the given properties.

- $\lim_{x \rightarrow -\infty} f(x) = -2$
- $\lim_{x \rightarrow -2} f'(x) = \infty$
- $\lim_{x \rightarrow 3^-} f'(x) = 1$
- $\lim_{x \rightarrow 3^+} f'(x) = -1$
- $\lim_{x \rightarrow 4} f(x) = -\infty$
- $\lim_{x \rightarrow \infty} f(x) = \infty$



7.3 Applications in Graphing Derivatives

Exercise 7.3.1 A car starts from rest and the graph of its position function is shown in the below figure, where s is measured in feet and t in seconds. Use it to graph the velocity and acceleration of the car. What is the acceleration at $t = 2$ seconds?

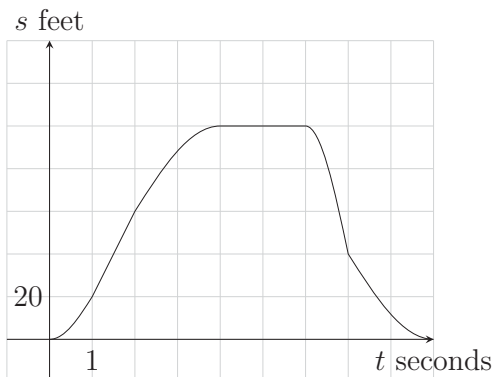


Figure 7.3.1: $y = s(t)$

