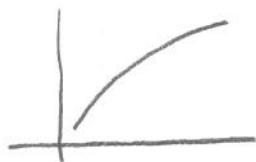


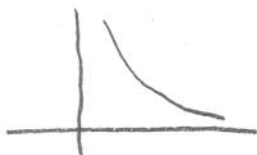
Quiz 3

Name: Key*You must show your work to get full credit.*

1. (a) Draw a graph of a function that is increasing and concave down.



- (b) Draw a graph of a function that is decreasing and concave up.



2. A ball dropped will fall a distance of
- $D(t) = 16t^2$
- feet in the
- $t$
- seconds after it is released.

- (a) What is average velocity of the ball between 2 and 4 seconds after it is released? Give units in your answer.

$$\frac{\Delta D}{\Delta t} = \frac{D(4) - D(2)}{4 - 2}$$

$$= \frac{16(4)^2 - 16(2)^2}{2}$$

$$= \frac{16(4^2 - 2^2)}{2}$$

The average velocity is

$$96 \frac{\text{feet}}{\text{sec}}$$

$$\begin{aligned} &= 8(16 - 4) \\ &= 8 \cdot 12 \\ &= 8(10 + 2) \\ &= 80 + 16 \\ &= 96 \end{aligned}$$

- (b) What is the average velocity between 2 and
- $2 + h$
- seconds after it is released. Simplify your answer and give units.

$$\frac{\Delta D}{\Delta t} = \frac{D(2+h) - D(2)}{2+h-2}$$

$$= \frac{16(2+h)^2 - 16(2)^2}{h}$$

$$= \frac{16((2+h)^2 - 2^2)}{h}$$

$$= \frac{16(4 + 4h + h^2 - 4)}{h}$$

$$= \frac{16h(4+h)}{h}$$

The average velocity is

$$64 + 16h \frac{\text{feet}}{\text{sec}}$$

$$\begin{aligned} &= 16(4+h) \\ &= 64 + 16h \end{aligned}$$