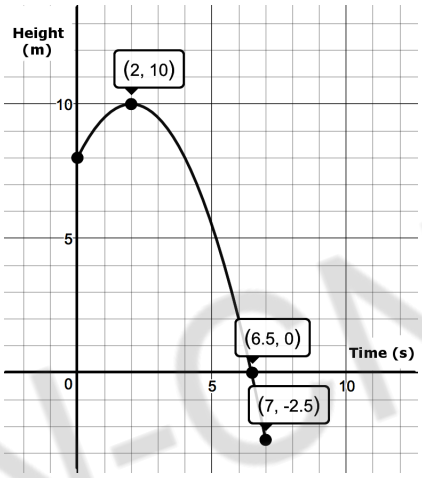
Functions – Properties – 01

1. A rock is thrown from the top of a cliff by the sea. The graph shows the height of the rock as a function of the time since it was thrown



a) For how long was the rock observed?

b) What was the maximum and minimum height observed?

c) What is the zero of this function and what does it mean in concrete terms?

d) What is the initial value and what does it mean in concrete terms?

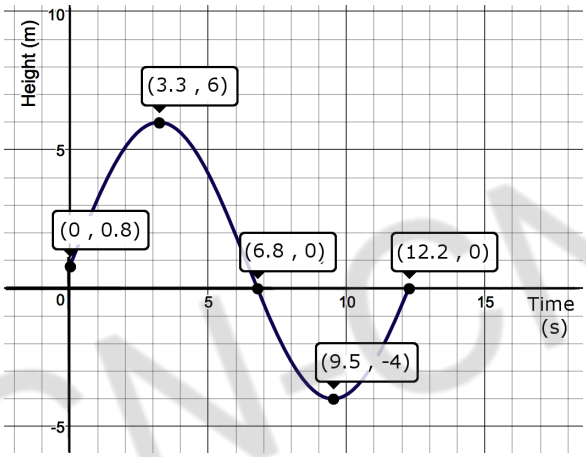
e) Over what interval was the rock on an upward trajectory?

f) Over what interval was the rock on a downward trajectory?

g) Over what interval did the rock possess a positive height value?

h) Over what interval did the rock possess a negative height value?

2. A roller coaster takes ride-goers above the park and under the ground. The graph shows the height of the passengers as a function of time since it was thrown



a) What is the domain of the function?

b) What is the range of the function?

c) What are the zeros of the function and what do they represent in concrete terms?

d) What is the initial value and what does it mean in concrete terms?

e) Over what interval was the coaster on an upward trajectory?

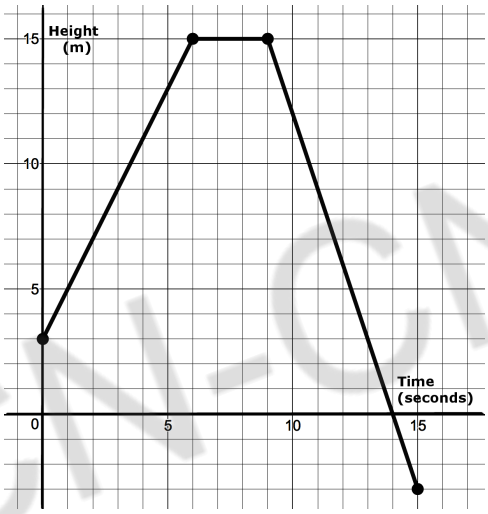
f) Over what interval was the coaster on a downward trajectory?

g) Over what interval did the coaster possess a positive height value?

h) Over what interval did the coaster possess a negative height value?

Functions – Properties – 02

1. A drone rises into the air, maintains a certain height, then falls back to the ground and lands in a lake.



a) What is the domain of the function?
What does it mean in concrete terms?

b) What is the range of the function?
What does it mean in concrete terms?

c) What are the zeros of the function and what do they represent in concrete terms?

d) What is the initial value and what does it mean in concrete terms?

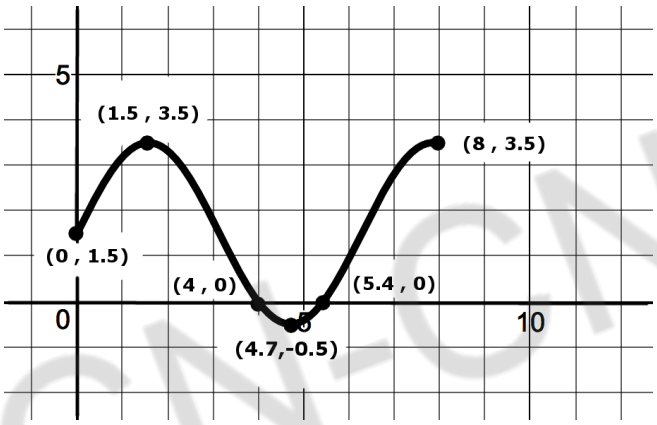
e) Over what interval was the drone on an upward trajectory?

f) Over what interval was the drone on a downward trajectory?

g) Over what interval did the drone possess a positive height value?

h) Over what interval did the drone possess a negative height value?

2. A roller coaster takes ride-goers above the park and under the ground. The graph shows the height of the passengers as a function of time (min) since it started



a) What is the domain of the function?

b) What is the range of the function?

c) What are the zeros of the function and what do they represent in concrete terms?

d) What is the initial value and what does it mean in concrete terms?

e) Over what interval was the coaster on an upward trajectory?

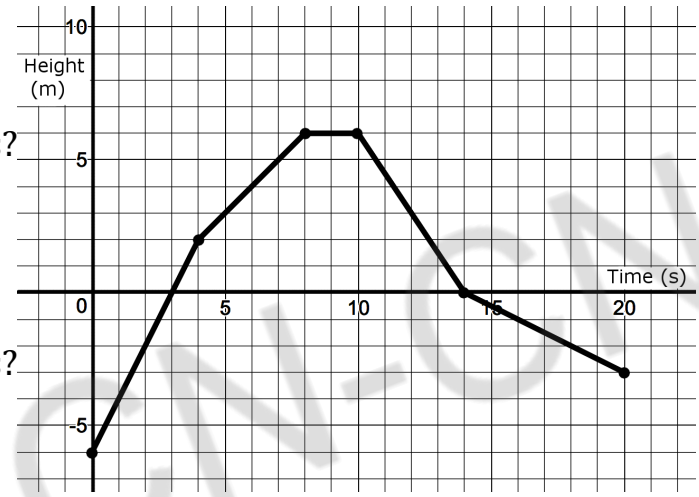
f) Over what interval was the coaster on a downward trajectory?

g) Over what interval did the coaster possess a positive height value?

h) Over what interval did the coaster possess a negative height value?

Functions – Properties – 03

1. A construction drill is turned on, raised into the air, then placed into the ground.



a) What is the domain of the function?
What does it mean in concrete terms?

b) What is the range of the function?
What does it mean in concrete terms?

c) What are the zeros of the function and what do they represent in concrete terms?

d) What is the initial value and what does it mean in concrete terms?

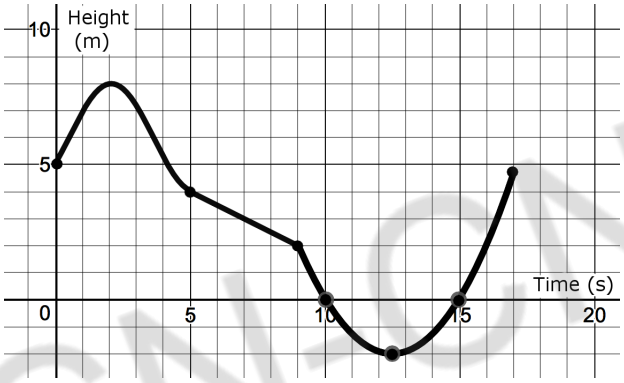
e) Over what interval was the drill on an upward trajectory?

f) Over what interval was the drill on a downward trajectory?

g) Over what interval did the drill possess a positive height value?

h) Over what interval did the drill possess a negative height value?

2. Mr. Stewart decides to build a skateboard ramp in his back yard.
He uses part of his in-ground pool in the design of the ramp.
The graph shows the elevation of the skateboard rider as a function of time (min) on the ramp



a) What is the domain of the function?
What does it mean in concrete terms?

b) What is the range of the function?
What does it mean in concrete terms?

c) What are the zeros of the function and what do they represent in concrete terms?

d) What is the initial value and what does it mean in concrete terms?

e) Over what interval was the coaster on an upward trajectory?

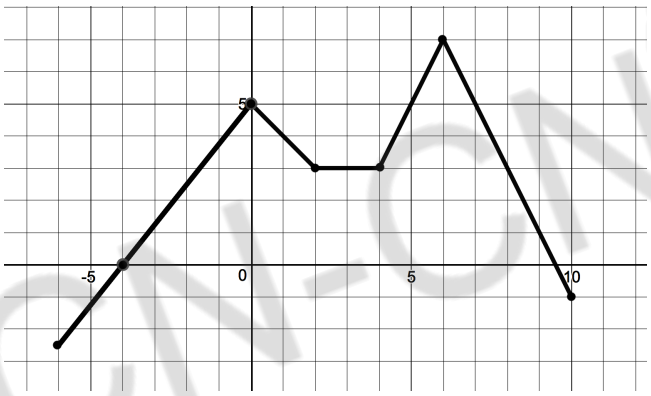
f) Over what interval was the coaster on a downward trajectory?

g) Over what interval did the coaster possess a positive height value?

h) Over what interval did the coaster possess a negative height value?

Functions – Properties – 04

1. A submarine periscope is turned on under water and raised into the air. A torpedo is fired (at time 0 seconds), then the periscope is returned under water.



a) What is the domain of the function?
What does it mean in concrete terms?

b) What is the range of the function?
What does it mean in concrete terms?

c) What are the zeros of the function and what do they represent?

d) What is the initial value of this function? What does it mean?

e) Over what interval was the periscope on an upward trajectory?

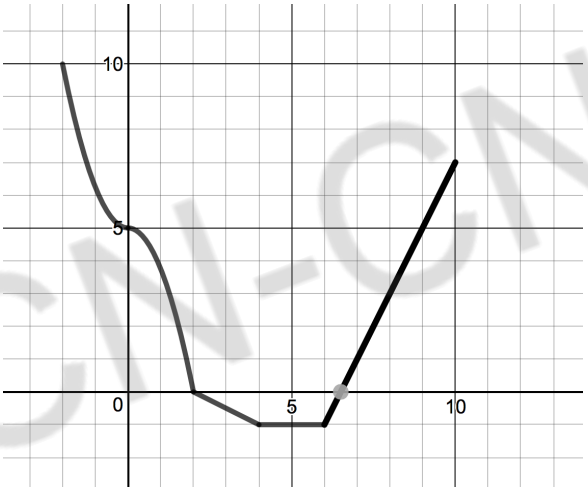
f) Over what interval was the periscope on a downward trajectory?

g) Over what interval was the periscope height constant?

h) Over what interval did the periscope possess a positive height value?

i) Over what interval did the periscope possess a negative height value?

2. Wesley builds a skateboard ramp in his back yard. He uses part of his in-ground pool in the design of the ramp. To ride on the ramp, Wesley jumps from the roof of his house. He makes contact with the ramp at time 0 seconds. The graph shows Wesley's elevation as a function of time (seconds) on the ramp



a) What is the domain of the function?
What does it mean in concrete terms?

b) What is the range of the function?
What does it mean in concrete terms?

c) What are the zeros of the function?

d) What is the initial value and what does it mean in concrete terms?

e) Over what interval is Wesley on an upward trajectory?

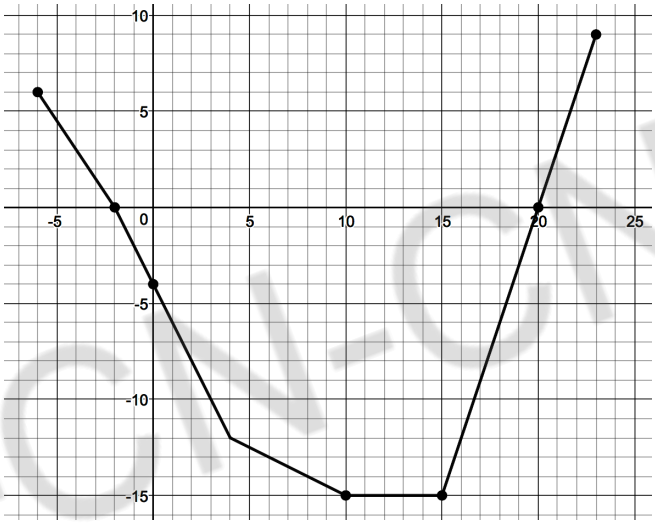
f) Over what interval is Wesley on a downward trajectory?

g) Over what interval does Wesley possess a positive height value?

h) Over what interval does Wesley possess a negative height value?

Functions – Properties – 05 – Practice Test

1. An underground oil drill is turned on and lowered into the sea. The drill is turned on when the time is at 0 seconds.



a) What is the domain of the function? How long is the drill being observed?

b) What is the range of the function? What elevation does it reach?

c) What are the zeros of the function and what do they represent?

d) What is the initial value of this function? What does it mean?

e) Over what interval was the drill on an upward trajectory?

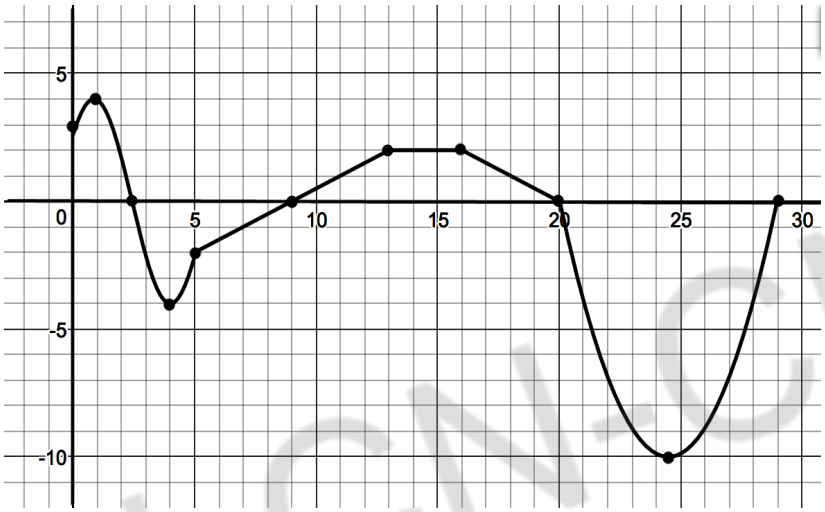
f) Over what interval was the drill on a downward trajectory?

g) Over what interval was the drill height constant?

h) Over what interval did the drill possess a positive height value?

i) Over what interval did the drill possess a negative height value?

2. An amusement park ride at Disney takes passengers above and below ground level. The graph shows the riders' elevation (m) as a function of time (seconds) on the ride.



a) What is the domain of the function? How long does the ride last?

b) What is the range of the function? What does it mean in real terms?

c) What are the zeros of the function?

d) What is the initial value?

e) Over what interval is the ride on an upward trajectory?

f) Over what interval is the ride on a downward trajectory?

g) Over what interval does the ride possess a positive height value?

h) Over what interval does the ride possess a negative height value?