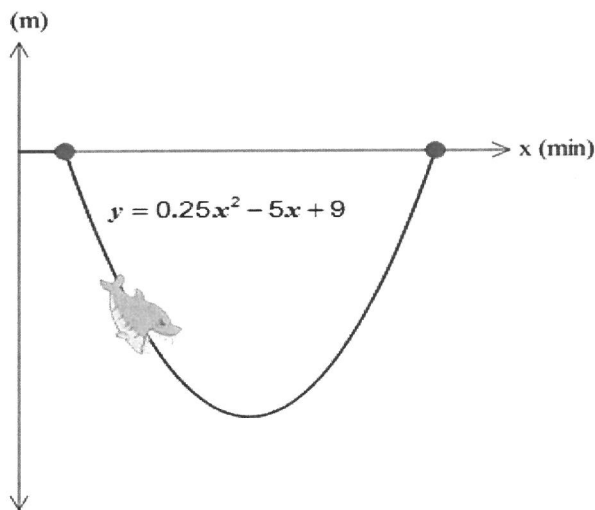## Quadratic - General Form #3
Amanda Zito

Question 1

A shark floated on the surface of the water and slowly descended several metres underwater. The motion of the shark was plotted on the distance-time graph shown below until it came back to the surface of the water.
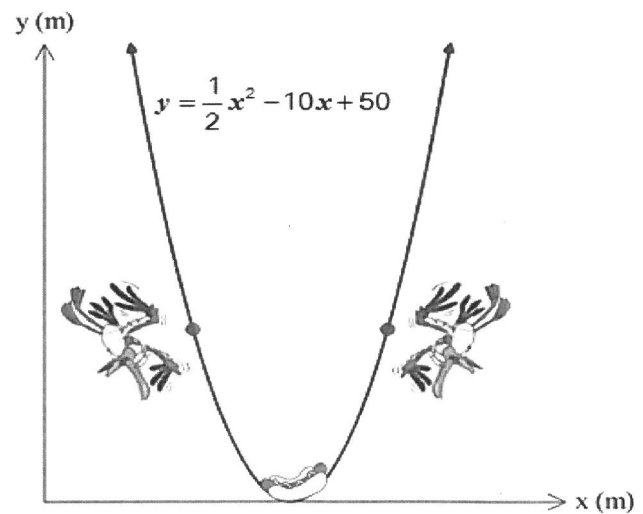
For how many minutes was the shark below the surface of the water?

(m)

$y = 0.25x^2 - 5x + 9$

Question 2

Two seagulls spot a hotdog on the ground (the x-axis) and fly down towards it as shown on the graph below. Both birds follow the opposite arms of a parabolic path.

What is the **shortest distance** between them when they are both 8 m off the ground?

y (m)

$$y = \frac{1}{2}x^2 - 10x + 50$$

x (m)

Question 3

A ground hog walked along Glenn's back yard for a moment before she found the spot where she wanted to start digging her hole. The depth of her position (digging and then climbing back to ground-level) has been represented below on the distance-time graph.

The x-axis represents the number of minutes she was digging (and then climbing back out) and the y-axis represents her position (depth) in relation to ground-level.
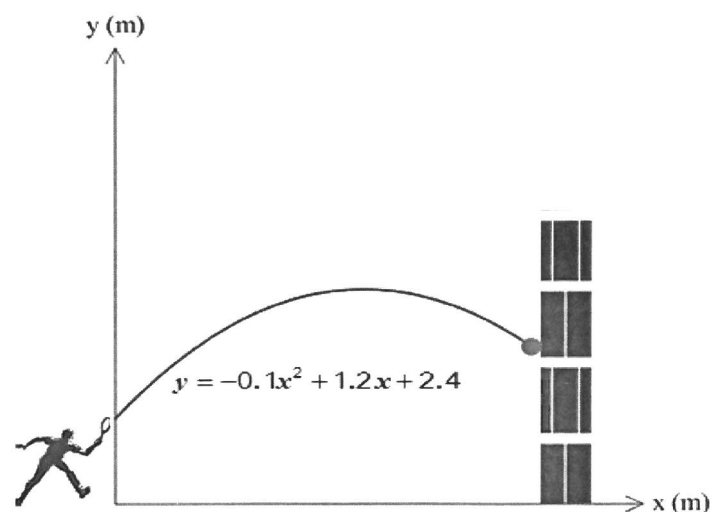
For how many minutes was she underground?

$$y = \frac{1}{8}x^2 - 5x + 18$$
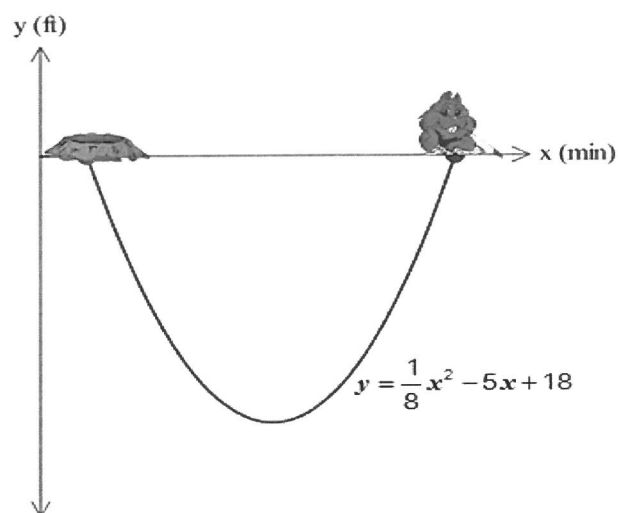
Question 4

Pat is warming up for his tennis match. He hit a serve along a parabolic path that struck the warm-up wall 4.4 metres off the ground. The serve is shown in the graph below.
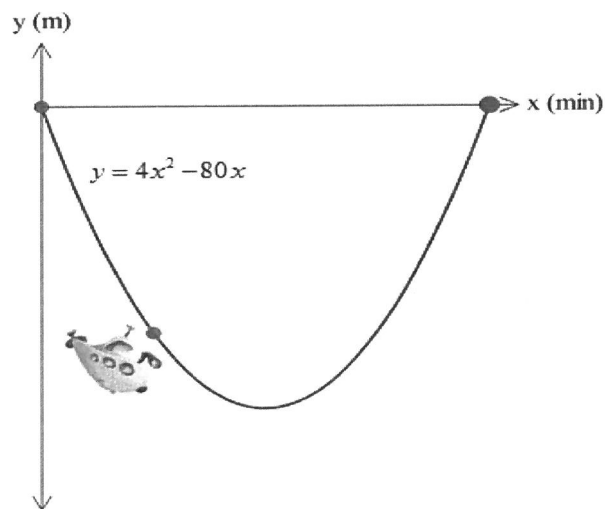
How far was Pat from the wall when he hit this serve?

$$y = -0.1x^2 + 1.2x + 2.4$$

Question 5

Jacques was in a submarine whose slow dive into the ocean was mapped on the distance-time graph shown below. His depth in relation to the time followed a parabolic path.

Given the information in the graph below, after how many **minutes** did his submarine first reach a depth of 300 m?

y (m)

$y = 4x^2 - 80x$

x (min)

Question 6

A flying squirrel jumps from the side of a building and lands on the top of an outdoor Christmas tree as shown in the graph below. Her jump followed a parabolic path.

What horizontal distance did she cover if the top of the Christmas tree is 8.4 metres tall?

y (m)

$y = -0.1x^2 + x + 9.5$

x (m)
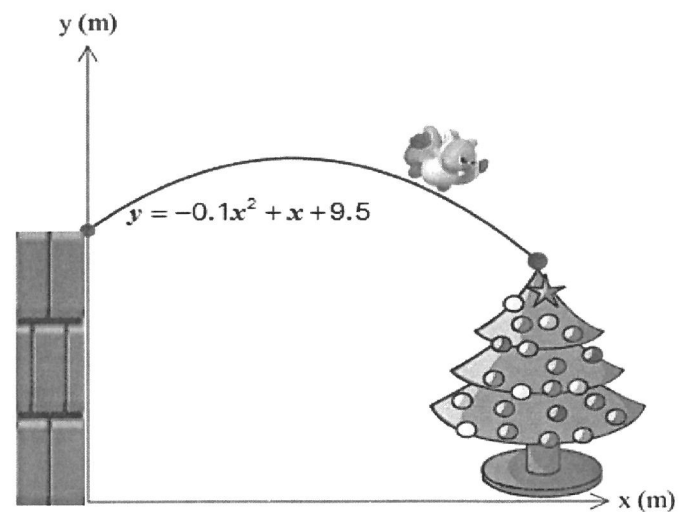
Question 7

Hendrik hits a golf ball as shown in the graph below. It follows a parabolic path where the x-axis represents the ground (and the horizontal distance) and the y-axis represents the vertical height of the ball's flight.

How far did Hendrik hit the ball before it landed (the horizontal distance above the ground)?

y (m)

$$y = -0.002x^2 + 0.4x$$

x (m)
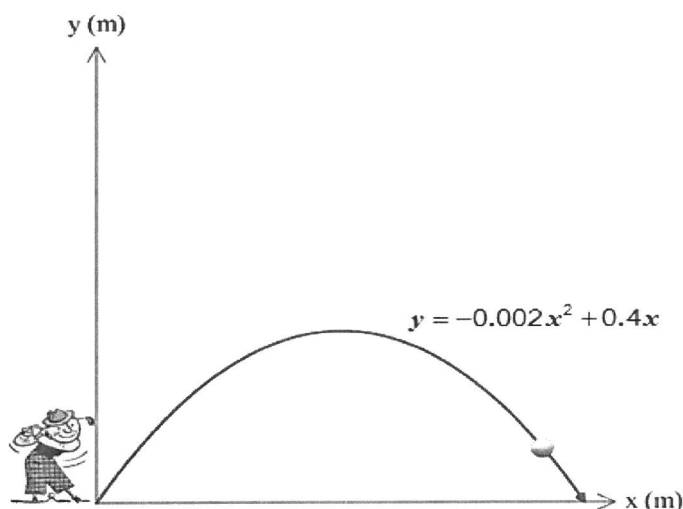
Question 8

A plane flew from Montreal to Toronto according to the parabolic rule shown in the distance-time graph below. The x-axis represents the number of minutes the plane was in the air and the y-axis represents its height off the ground in metres.

For how many minutes was the plane in the air?

y (m)

$$y = -10x^2 + 600x$$

x (min)
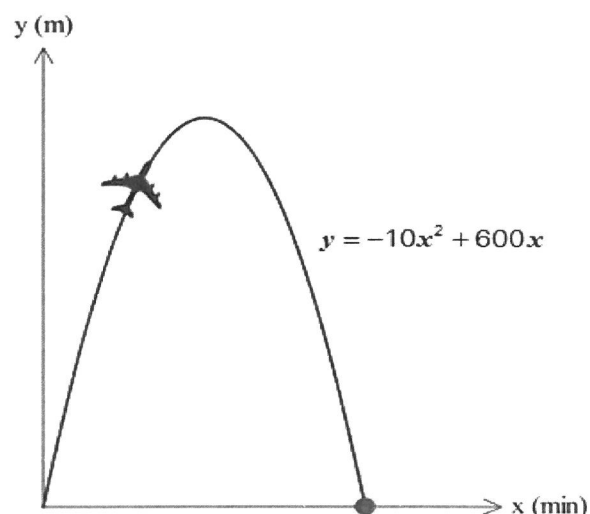
Question 9

Stan and Earl were throwing a football to each other. Earl bounced on a trampoline and caught one of Stan's passes 4 metres off the ground as the football decreased in height. The pass that Stan threw followed a parabolic path as shown in the graph below.

What horizontal distance did Earl catch the ball away from Stan?

y (m)

$y = -0.01x^2 + 0.32x + 2.44$

x (m)
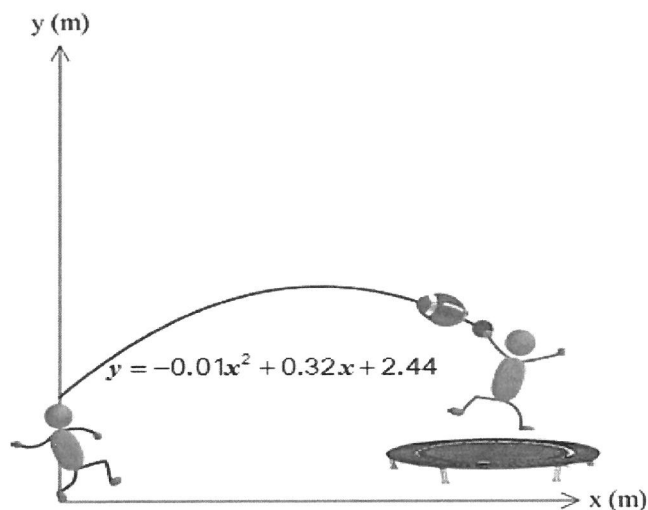
Question 10

On a distant planet, an alien life form fires a flare gun to signal her crewmates. The path of the signal has been mapped on the distance-time graph shown below.

How many seconds does it take for the signal to first reach a height of 15 m on this large and foreign world?

y (m)

$y = -\dfrac{1}{4}x^2 + 4x$

x (s)