

Nolan and Rodger are throwing snowballs into a parking lot from their balcony that is 256 feet above the parking lot. Nolan is throwing snowballs with an upward velocity of 96 feet per second. Rodger is simply dropping his snowballs over the balcony edge.

a. Write a function rule that will represent the height from the ground as a function of time for a Nolan thrown snowball.

b. Find the height of a Nolan thrown snowball at 2 second. Show your work.

c. Find the height of a Nolan thrown snowball at 7 seconds. Show your work.

d. How long does it take for a Nolan thrown snowball take to hit the ground?

e. Find the maximum height of a Nolan thrown snowball. At what time does the snowball reach its maximum height?

Solve by factoring

a. $x^2 + 3x - 54 = 0$

b. $x^2 + 7x + 10 = 0$

c. $x^2 - 7x - 30 = 0$

d. $x^2 + 16x = -15$

e. $x^2 = 5x + 84$

f. $x^2 - 2x - 19 = -4$

g. $3x^2 + 16x + 5 = 0$

h. $8x^2 + 2x - 3 = 0$

i. $6x^2 - 11x - 10 = 0$

Simplify each radical

$$\sqrt{24}$$

$$\sqrt{72}$$

$$\sqrt{128}$$

$$\sqrt{8^2 + 15^2}$$

$$\frac{\sqrt{112}}{\sqrt{7}}$$

Solve using the quadratic formula. Simplify all radicals and if the solution is complex leave in the form of $a+bi$.

$$3x^2 - 5x + 1 = 0$$

$$x^2 + 2x + 5 = 0$$

$$-3x^2 - 5x + 10 = 0$$

$$4x^2 + 8x - 1 = 0$$

Solve by factoring

$$2x^2 + 19x + 24 = 0$$

$$x^2 - 20x = -51$$

$$2x^2 + 16x - 130 = 0$$

$$6x^2 - 23x - 18 = 0$$

Solve by any method

$$x^2 + 6x - 3 = 0$$

$$3x^2 + 8x = 3$$

$$5x^2 + 8x - 8 = 0$$

$$2x^2 + x - 6 = 0$$

Perform the indicated operation. Write your answer in standard form

$$2 + 3i + 7 - i$$

$$2 - 6i - (-10 + 4i)$$

$$-i + (8 - 2i) - (5 - 9i)$$

$$(30 - i) - (18 + 6i) + 30i$$

$$i(3 + i) - 2i$$

$$(5 + i)(8 - 3i)$$

Katie, a goalie for Riverside High School's soccer team, needs to get the ball downfield to her teammates on the offensive end of the field. She punts the ball from a point 2 feet above the ground with an initial upward velocity of 40 feet per second.

Write an function rule that relates the ball's height above the ground to its time in the air.

Use the function rule to find the time when the ball hits the ground.

What time does the ball reach its maximum height? What is the maximum height?