Quadratic Homework – Homework: Completing the Square*

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Abstract

Practice homework set on completing the square.

Exercise 1

A pizza (a perfect circle) has a 3" radius for the real pizza part (the part with cheese). But they advertise it as having an area of 25 π square inches, because they include the crust. How wide is the crust?

Exercise 2

According to NBA rules, a basketball court must be precisely 94 feet long and 50 feet wide. (That part is true—the rest I'm making up.) I want to build a court, and of course, bleachers around it. The bleachers will be the same depth (*by "depth" I mean the length from the court to the back of the bleachers) on all four sides. I want the total area of the room to be 8,000 square feet. How deep must the bleachers be?

Exercise 3

Recall that the height of a ball thrown up into the air is given by the formula:

$h(t) = h_o + v_o t - 16t^2$

I am standing on the roof of my house, 20 feet up in the air. I throw a ball **up** with an initial velocity of 64 feet/sec. You are standing on the ground below me, with your hands 4 feet above the ground. The ball travels up, then falls down, and then you catch it. How long did it spend in the air?

Solve by completing the square.

Exercise 4

$x^2 + 6x + 8 = 0$

Exercise 5

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

Exercise 6

$x^2 + 8x + 20 = 0$

Exercise 7

$x^2 + x = 0$

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Exercise 8

$3x^2 - 18x + 12 = 0$

Exercise 9

Consider the equation $x^2 + 4x + 4 = c$ where c is some constant. **For what values of** c will this equation have...

a. Two real answers?
b. One real answer?
c. No real answers?

Exercise 10

Solve by completing the square: $x^2 + 6x + a = 0$. (a is a constant.)