

Homework: Combinatorics

1.

There are eight people in a tennis club. Which expression can be used to find the number of different ways they can place first, second, and third in a tournament?

(1) ${}_8P_3$

(3) ${}_8P_5$

(2) ${}_8C_3$

(4) ${}_8C_5$

2.

Which problem involves evaluating ${}_6P_4$?

(1) How many different four-digit ID numbers can be formed using 1, 2, 3, 4, 5, and 6 without repetition?

(2) How many different subcommittees of four can be chosen from a committee having six members?

(3) How many different outfits can be made using six shirts and four pairs of pants?

(4) How many different ways can one boy and one girl be selected from a group of four boys and six girls?

3.

If $A = 3x^2 + 5x - 6$ and $B = -2x^2 - 6x + 7$, then $A - B$ equals

(1) $-5x^2 - 11x + 13$

(3) $-5x^2 - x + 1$

(2) $5x^2 + 11x - 13$

(4) $5x^2 - x + 1$

4.

What are the roots of the equation $x^2 + 4x - 16 = 0$?

(1) $2 \pm 2\sqrt{5}$

(3) $2 \pm 4\sqrt{5}$

(2) $-2 \pm 2\sqrt{5}$

(4) $-2 \pm 4\sqrt{5}$

5.

The formula for the volume of a cone is $V = \frac{1}{3}\pi r^2 h$. The radius, r , of the cone may be expressed as

(1) $\sqrt{\frac{3V}{\pi h}}$

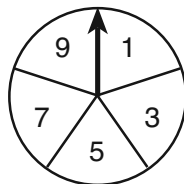
(3) $3\sqrt{\frac{V}{\pi h}}$

(2) $\sqrt{\frac{V}{3\pi h}}$

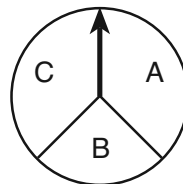
(4) $\frac{1}{3}\sqrt{\frac{V}{\pi h}}$

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34 In a game, a player must spin each spinner shown in the diagram below once.



Spinner 1



Spinner 2

Draw a tree diagram or list a sample space showing all possible outcomes.

Determine the number of outcomes that consist of a prime number and a letter in the word "CAT."