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Algebra 1 january 2017 regents answers part 2

The following are questions and answers (and comments) for part of the New York State Algebra Regents exam. If you have any questions or comments (or corrections), please add them in the Comments section. January 2017, Algebra I (Common Core), Part II 25. In an attempt to solve the system of equations $y = 3x - 2$ and $6x - 2y = 4$, John graphed the two equations on his graphics computer. Because he saw only one line, John wrote that the answer to the system is the empty set. Is he right? Explain your answer. John's not right. The answer is not the empty set. The answer is that the two lines are coincidences (overlapping one another), so there are an infinite number of points that solve this system of equations. Proof: $6x - 2y = 4 - 2y = -6x + 4$ $y = 3x - 2$, which is the other line. The two lines are random lines. The empty set would mean that the lines never crossed; i.e., they are parallel and have no points in common. 26. A typical marathon is 26.2 miles. Allan has an average of 12 kilometers per hour when you run marathons. Determine how long it will take Allan to complete a marathon, to the nearest tenth of an hour. Justify your answer. Justify means you have to show your work or provide some kind of proof. This issue is about converting the unit, and the conversion you need is in the back of the book: 1 mile = 1.60943 km 26.2 miles = 26.2 (1.60943 km/mi) = 42.164708 km 42.164708 km / (12 km/h) = 3.5137256666... That's 3.5 to the nearest tenth of an hour. 27. Solve the inequality below: $1.8 - 0.4y \geq 2.2 - 2y$ Solve inequalities as you solve equations, but be aware of dividing in negative numbers. $1.8 - 0.4y \geq 2.2 - 2y - 0.4y \geq 0.4 - 2y - 0.4y \geq 0.4 - 2y 1.6y \geq 0.4 y \geq 0.25$ Unusual that they do not multiply or divide with a negative, but watch out. 28. Jakob works on math homework. He decides that the sum of the expression $\frac{1}{3} + 6\sqrt[5]{7}$ must be rational, as it is a fraction. Is Jakob right? Explain your reasoning. Jakob's not right. For a fraction to be rational, both the numerator and the denominator must be rational numbers. Six Five Radicals is an irrational number, and dividing it by 7 doesn't mean it's rational. Finally, the sum of any rational number (e.g. $\frac{1}{3}$) and an irrational number is always irrational. 29. Inequality graph $y \geq 2x - 5$ on the axis set below. Specify the coordinates of a point in its solution. The graph will be a broken line with a slope of 2 and a y interception of -5, which is shaded above the line. If you do not remember where to shade, here is the simple test: take the point (0, 0) and replace it in inequality. Where does the result a true statement? Is it $0 \geq 2(0) - 5$? Yes, $0 \geq -5$, so the point is shaded region. Because this point is above the line, it will shadow above the line. Like this: Remember to state any point in the solution. (0, 0) would work. Or (-10, 0), (0, 10). Any point in the shaded section that is not on the line. The line is NOT part of the solution because it is broken. 30. Sandy has scheduled a website's checkout process with an equation to calculate how much customers will charge when downloading songs. The site offers a discount. If a song is purchased at the full price of \$1.29, then each additional song is \$.99. Specify an equation that represents the cost, C, when the songs are downloaded. Sandy thought she'd be charged \$52.77 for 52 songs. Is that the right amount? Justify your answer. The linear equation that shapes this issue is (Note that the variables are up to you): $C = 1.29 + .99(n - 1)$ Pay \$1.29 for the first song. If you buy n song, you will pay 99 cents for n - 1 of them. To find the cost of 52 songs, substitute 52 for n: $C = 1.29 + 0.99(52 - 1) = 51.78$ Sandy is incorrect. Not that they asked for this, but it seems like her mistake is that she calculated $C = 1.29 + 0.99(52)$ without subtracting 1 first. 31. A family is traveling from their home to a holiday resort hotel. The table below shows their distance from home depending on the time. Time (hours) 0 2 5 7 Distance (mi) 0 140 375 480 Determine the average change rate between 2 and 7 o'clock, including units. The average rate of change between points (2, 140) and (7, 480) is the difference between y values divided by the difference of x values: $(480 - 140) / (7 - 2) = 340 / 5 = 68$ mi / hour. Note that the question said to include units so as to better include units or you will lose a point! 32. Nora says that the graph of a circle is a function, because she can track the entire graph without lifting her pencil. Mia says that a circle graph is not a function because multiple values of x map at the same y value. Determine if any of them are correct and fully justify your answer. None of them are right. Nora is wrong, because not lifting a pencil is not the definition of a function. Piecewise functions sometimes require you to pick up the pencil. Mia is wrong because she has it back: there are several y values for the same x, which is the vertical line test. What Mia described would be a horizontal line test, but there is no such thing for functions. You are allowed to have multiple x map values at the same y value. (For example: the absolute value function repeats y values for more than one x.) The end of Part II did you manage? Comments, questions, corrections and concerns are welcome. Pattern mistakes happen. We have officially placed NYS Regents exams as well as key solutions for each exam. I highly recommend you to work through problems on your own. Don't expect to get better if you're just here to Responses. Ultimately your goal should be to do your best on the NYS Regents exam and that can't happen if you just copy my work and answers. You have to solve the problems. Problems. Your. Gambling!! Part I: Problems 1 - 12 Part I: Problems 13 - 24Part 2 - 4: Problems 25 - 37 Part I: Problems 1 - 12 Part I: Problems 13 - 24Part 2 - 4: Problems 25 - 37 Part I: Problems 1 - 12 Part I: Problems 13 - 24Part 2 - 4: Problems 25 - 37 January 2020 August 2019 June 2019 January 2019 August 2018 June 2018 January 2018 August 2017 June 2017 January 2017 August 2016 June 2016 January 2016 August 2015 June 2015 January 2015 August 2014 Last updated: 19 February 2020 The following are the questions and answers (and comments) for part of the New York State Algebra Exam. If you have any questions or comments (or corrections), please add them in the Comments section. January 2017, Algebra I (Common Core), Part II 25. In an attempt to solve the system of equations $y = 3x - 2$ and $6x - 2y = 4$, John graphed the two equations on his graphics computer. Because he saw only one line, John wrote that the answer to the system is the empty set. Is he right? Explain your answer. John's not right. 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