Algebra 2 quick quiz 02062023

Question 1.

For all positive values of x, which expression is equivalent to $x^{\frac{3}{4}}$?

(1) $\sqrt[4]{x^3}$

(2) $\sqrt[3]{x^4}$

(3) $(x^3)^4$

(4) $3(x^4)$

Question 2

Mrs. Favata's statistics class wants to conduct a survey to see how students feel about changing the school mascot's name. Which plan is the best process for gathering an appropriate sample?

(1) Survey students in a random sample of senior homerooms.

(2) Survey every tenth student entering art classes in the school.

(3) Survey every fourth student entering the cafeteria during each lunch period.

(4) Survey all members of the school's varsity sports teams.

Question 3.

Given $x \neq -3$, the expression $\frac{2x^3 + 7x^2 - 3x - 25}{x + 3}$ is equivalent to

(1) $2x^2 + x - 6 - \frac{7}{x+3}$

(2) $2x^2 + 13x - 36 + \frac{83}{x+3}$

(3) $2x^2 + x - 13$

(4) $x^2 + 4x - 15 + \frac{20}{x+3}$

Question 4.

In a group of 40 people, 20 have brown hair, 22 have blue eyes, and 15 have both brown hair and blue eyes. How many people have neither brown hair nor blue eyes?

(1) 0

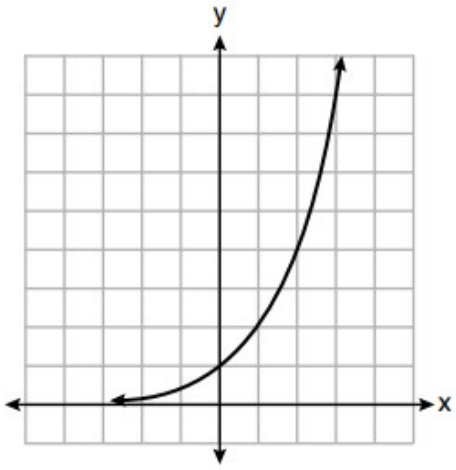
(2) 13

(3) 27

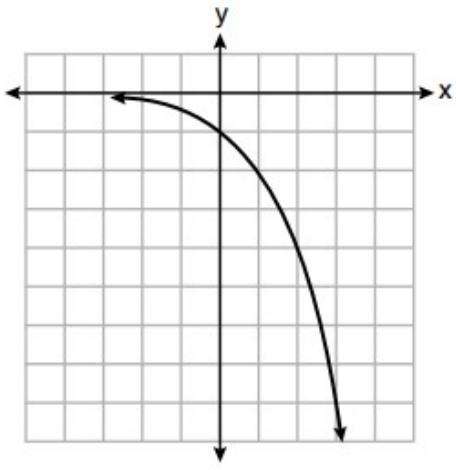
(4) 32

Question 5.

Consider the function $y = h(x)$, defined by the graph below.



Which equation could be used to represent the graph shown below?



(1) $y = h(x) - 2$

(2) $y = h(x - 2)$

(3) $y = -h(x)$

(4) $y = h(-x)$

Question 6.

For the polynomial $p(x)$, if $p(3) = 0$, it can be concluded that

(1) $x + 3$ is a factor of $p(x)$

(2) $x - 3$ is a factor of $p(x)$

(3) when $p(x)$ is divided by 3, the remainder is zero

(4) when $p(x)$ is divided by -3, the remainder is zero

Question 7.

Consider the system of equations below.

$$\begin{aligned} x + 2y - z &= 1 \\ -x - 3y + 2z &= 0 \\ 2x - 4y + z &= 10 \end{aligned}$$

What is the solution to the given system of equations?

(1) (1,1,2)

(2) (3,−1,0)

(3) (5,−1,2)

(4) (3,5,8)

Question 8.

Monthly mortgage payments can be found using the formula below, where M is the monthly payment, P is the amount borrowed, r is the annual interest rate, and n is the total number of monthly payments.

$$M = \frac{P\left(\frac{r}{12}\right)\left(1 + \frac{r}{12}\right)^n}{\left(1 + \frac{r}{12}\right)^n - 1}$$

If Adam takes out a 15-year mortgage, borrowing \$240,000 at an annual interest rate of 4.5%, his monthly payment will be

(1) \$1379.09

(2) \$1604.80

(3) \$1835.98

(4) \$9011.94

Question 9.

For all real values of x, if $f(x) = (x - 3)^2$ and $g(x) = (x + 3)^2$, what is $f(x) - g(x)$?

(1) -18
(2) 0
(3) $-12x$
(4) $2x^2 - 12x - 18$

Question 10.

If $f(t) = 50(.5)^{\frac{t}{5715}}$ represents a mass, in grams, of carbon-14 remaining after t years, which statement(s) must be true?

I. The mass of the carbon-14 is decreasing by half each year.
II. The mass of the original sample is 50 g.

(1) I, only
(2) II, only
(3) I and II
(4) neither I nor II

Bonus Question

Question 11 Show working on the back of the answer paper.

Given $f(x) = 3x^3 - 4x^2 + 2x - 1$ and $g(x) = x - 4$, state the quotient and remainder of $\frac{f(x)}{g(x)}$, in the form $q(x) + \frac{r(x)}{g(x)}$.