PCAT-SECTION3 Q&As

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QUESTION 1

What is the slope of a line that passes through the points (0, 4) and (4, 0)?

A. 4

B. -1

C. 0

D. undefined

Correct Answer: B

The slope of a line that passes through the points (0, 4) and (4, 0) can be found by:

$$m=\frac{y_2-y_1}{x_2-x_1}=\frac{0-4}{4-0}=-\frac{4}{4}=-1.$$

QUESTION 2

$$\left(\frac{4}{3}\right)^2+\left(\frac{2}{4}\right)^2=$$

A. 96/36

B. 84/36

C. 73/36

D. 65/36

Correct Answer: C

The sum of

$$\left(\frac{4}{3}\right)^2+\left(\frac{2}{4}\right)^2=$$

Canbe found by first computing the value of each term

$$\left(\frac{4}{3}\right)^2=\left(\frac{4^2}{3^2}\right)=\frac{16}{9}$$

$$\left(\frac{2}{4}\right)^2=\left(\frac{2^2}{4^2}\right)=\frac{4}{16}=\frac{1}{4}$$

$$\left(\frac{4}{3}\right)^2+\left(\frac{2}{4}\right)^2=\frac{16}{9}+\frac{1}{4}=\frac{64+9}{36}=\frac{73}{36}.$$

QUESTION 3

1/3 ÷ 5/9 =

A. $\frac{3}{5}$ B. $\frac{5}{3}$ C. $\frac{5}{9}$ D. $\frac{1}{9}$

A. Option A

B. Option B

C. Option C

D. Option D

Correct Answer: A

The quotient of the two fractions can be found by writing the fractions as:

$$\frac{1}{3}\div\frac{5}{9}=\frac{\frac{1}{3}}{\frac{5}{9}}=\left(\frac{1}{3}\right)\cdot\left(\frac{9}{5}\right)=\frac{3}{5}.$$

QUESTION 4

Evaluate the following derivative:

$$\frac{d}{dx}\left(3x^3-2x^2\right)$$

A. $3x^2+2x$ B. $3x^2-2x$ C. $9x^2-4x$ D. $9x^2+4x$

A. Option A

B. Option B

C. Option C

D. Option D

Correct Answer: C

The derivative of a polynomial is the sum of the derivatives of the terms of the polynomial, or:

$$\begin{aligned}\frac{d}{dx}\left(3x^3-2x^2\right)&=\frac{d}{dx}\left(3x^3\right)-\frac{d}{dx}\left(-2x^2\right)\\&=\frac{d}{dx}\left(3x^3\right)-\frac{d}{dx}\left(2x^2\right)\\&=9x^2-4x.\end{aligned}$$

QUESTION 5

Which line is parallel to the line y + 3x = 8?

A. $y+\frac{1}{3}x=-5$ B. $y-\frac{1}{3}x=-5$ C. $y+3x=-5$ D. $y-3x=-5$

A. Option A

B. Option B

C. Option C

D. Option D

Correct Answer: C

QUESTION 6

What are the roots of the equation x2 7x 18 = 0?

A. 4.5, 1

B. 2, 4.5

C. 3.5, 8

D. 1, 4.5

Correct Answer: A

QUESTION 7

Evaluate the following derivative: A. Option A

$$\frac{d}{dx}\left(\frac{15}{3x^8}\right)$$

A. $-\frac{40}{x^9}$ B. $\frac{40}{x^9}$ C. $-\frac{40}{x^{-9}}$ D. $\frac{40}{x^{-9}}$

B. Option B

C. Option C

D. Option D

Correct Answer: A

QUESTION 8

A student obtained an average of 86 for a series of seven assignments. Six of the grades were 85, 78, 83, 91, 89, and 86. The grade of the seventh assignment is:

A. 74

B. 86

C. 90

D. 98

Correct Answer: C

From the information in the problem,

$$\text{Average} = \frac{\text{Sum of Terms}}{\text{Number of Terms}}$$

$$86 = \frac{85+78+83+91+89+86+x}{7} = \frac{512+x}{7}$$

$$x = 86 \times 7 - 512 = 602 - 512 = 90.$$

QUESTION 9

A. -7

B. 2

C. 6

D. 7

Correct Answer: D

QUESTION 10

What is the probability of selecting a face card of a spade suit from two standard decks of cards?

A. 3/52

B. 6/52

C. 6/104

D. 46/104

Correct Answer: C

You are asked to determine the probability of randomly selecting one face card (king, queen, or jack) of a spade suit from two standard decks of cards. Because there are two decks of cards, a single card can be selected from two decks inn= 104 different ways. Since there are 3 face cards of a spade suit in one deck of cards, such a card can be drawn from the two decks ins= 6 different ways. Thus, the probability that the selected card is a face card of a spade suit is:p=s/n= 6/104

QUESTION 11

What are the roots of the quadratic equation 3x2 x 10 = 0?

A. $x=\sqrt{2}, -\frac{5}{3}$ B. $x=2, -\sqrt{\frac{5}{3}}$ C. $x=-2, \sqrt{\frac{5}{3}}$ D. $x=2, -\frac{5}{3}$

A. Option A

B. Option B

C. Option C

D. Option D

Correct Answer: D

QUESTION 12

Solve for x: x2 12 x=36

A. 2

B. 3

C. 4

D. 6

Correct Answer: D

The first thing to do in solving the equationx2 12x=36 forxis to rewrite the equation by adding 36 to both sides and then to express the equation in terms of factors: x2 12x+ 36 = 0 (x6) · (x 6) = 0 Solving the equation forxyieldsx= 6.

QUESTION 13

A bag of Skittles® contains 10 red, 9 yellow, 8 orange, 6 green, and 4 blue colored candies. What is the probability of randomly choosing an orange-colored candy from the bag?

A. 8/37

B. 37/8

C. 8/27

D. ¾

Correct Answer: A

The probability of selecting a single orange-colored candy from a bag of Skittles® requires 8 successful outcomes out of 37 possible outcomes. So the probability of selecting a single orange- colored candy is: p= 8/37

QUESTION 14

If and x/y = 8 and x=64, then what is the sum x + y?

A. 56

B. 64

C. 72

D. 81

Correct Answer: C

From the first equation, multiply both sides byyresulting in x= 8y.

Becausex= 64, you can write

64 = 8y

Y=8

Substituting the given information regardingxandyinto its sum yields:

x+y= 64 + 8 = 72.

QUESTION 15

Evaluate the following indefinite integral: A. Option A

$$\int t^2\left(\frac{5}{t}-\frac{t}{5}\right)dt$$

A. $\frac{5t^2}{2}+\frac{t^4}{20}+C$ B. $\frac{5t^2}{2}+\frac{t^4}{20}-C$ C. $-\frac{5t^2}{2}-\frac{t^4}{20}+C$ D. $-\frac{5t^2}{2}+\frac{t^4}{20}+C$

B. Option B

C. Option C

D. Option D

Correct Answer: B