Question 1 of 20

5.0 Points

Use the Binomial Theorem to find a polynomial expansion for the following function.

f1(x) = (x - 2)4

A. f1(x) = x4 - 5x3 + 14x2 - 42x + 26

B. f1(x) = x4 - 16x3 + 18x2 - 22x + 18

C. f1(x) = x4 - 18x3 + 24x2 - 28x + 16

D. f1(x) = x4 - 8x3 + 24x2 - 32x + 16

Question 2 of 20

5.0 Points

Write a formula for the general term (the nth term) of each arithmetic sequence. Do not use a recursion formula. Then use the formula for an to ﬁnd a20, the 20th term of the sequence.

an = an-1 - 10, a1 = 30

A. an = 60 - 10n; a = -260

B. an = 70 - 10n; a = -50

C. an = 40 - 10n; a = -160

D. an = 10 - 10n; a = -70

Question 3 of 20

5.0 Points

Write the first six terms of the following arithmetic sequence.

a1 = 5/2, d = - ½

A. 3/2, 2, 1/2, 1, 1/4, 0

B. 7/2, 2, 5/2, 1 ,3/2, 0

C. 5/2, 2, 3/2, 1, 1/2, 0

D. 9/2, 2, 5/2, 1, 1/2, 0

Question 4 of 20

5.0 Points

You volunteer to help drive children at a charity event to the zoo, but you can ﬁt only 8 of the 17 children present in your van. How many different groups of 8 children can you drive?

A. 32,317 groups

B. 23,330 groups

C. 24,310 groups

D. 25,410 groups

Question 5 of 20

5.0 Points

A club with ten members is to choose three officers—president, vice president, and secretary-treasurer. If each office is to be held by one person and no person can hold more than one office, in how many ways can those offices be filled?

A. 650 ways

B. 720 ways

C. 830 ways

D. 675 ways

Question 6 of 20

5.0 Points

If three people are selected at random, find the probability that they all have different birthdays.

A. 365/365 \* 365/364 \* 363/365 ≈ 0.98

B. 365/364 \* 364/365 \* 363/364 ≈ 0.99

C. 365/365 \* 365/363 \* 363/365 ≈ 0.99

D. 365/365 \* 364/365 \* 363/365 ≈ 0.99

Question 7 of 20

5.0 Points

To win at LOTTO in the state of Florida, one must correctly select 6 numbers from a collection of 53 numbers (1 through 53). The order in which the selection is made does not matter. How many different selections are possible?

A. 32,957,326 selections

B. 22,957,480 selections

C. 28,957,680 selections

D. 225,857,480 selections.

Question 8 of 20

5.0 Points

Consider the statement "2 is a factor of n2 + 3n."

If n = 1, the statement is "2 is a factor of \_\_\_\_\_\_\_\_\_\_."

If n = 2, the statement is "2 is a factor of \_\_\_\_\_\_\_\_\_\_."

If n = 3, the statement is "2 is a factor of \_\_\_\_\_\_\_\_\_\_."

If n = k + 1, the statement before the algebra is simpliﬁed is "2 is a factor of \_\_\_\_\_\_\_\_\_\_."

If n = k + 1, the statement after the algebra is simpliﬁed is "2 is a factor of \_\_\_\_\_\_\_\_\_\_."

A.

4; 15; 28; (k + 1)2 + 3(k + 1); k2 + 5k + 8

B.

4; 20; 28; (k + 1)2 + 3(k + 1); k2 + 5k + 7

C.

4; 10; 18; (k + 1)2 + 3(k + 1); k2 + 5k + 4

D.

4; 15; 18; (k + 1)2 + 3(k + 1); k2 + 5k + 6

Question 9 of 20

5.0 Points

If 20 people are selected at random, ﬁnd the probability that at least 2 of them have the same birthday.

A. ≈ 0.31

B. ≈ 0.42

C. ≈ 0.45

D. ≈ 0.41

Question 10 of 20

5.0 Points

k2 + 3k + 2 = (k2 + k) + 2 ( \_\_\_\_\_\_\_\_\_\_ )

A. k + 5

B. k + 1

C. k + 3

D. k + 2

Question 11 of 20

5.0 Points

Write the first six terms of the following arithmetic sequence.

an = an-1 + 6, a1 = -9

A. -9, -3, 3, 9, 15, 21

B. -11, -4, 3, 9, 17, 21

C. -8, -3, 3, 9, 16, 22

D. -9, -5, 3, 11, 15, 27

Question 12 of 20

5.0 Points

Use the Binomial Theorem to expand the following binomial and express the result in simpliﬁed form.

(x2 + 2y)4

A. x8 + 8x6 y + 24x4 y2 + 32x2 y3 + 16y4

B. x8 + 8x6 y + 20x4 y2 + 30x2 y3 + 15y4

C. x8 + 18x6 y + 34x4 y2 + 42x2 y3 + 16y4

D. x8 + 8x6 y + 14x4 y2 + 22x2 y3 + 26y4

Question 13 of 20

5.0 Points

An election ballot asks voters to select three city commissioners from a group of six candidates. In how many ways can this be done?

A. 20 ways

B. 30 ways

C. 10 ways

D. 15 ways

Question 14 of 20

5.0 Points

Find the indicated term of the arithmetic sequence with first term, a1, and common difference, d.

Find a200 when a1 = -40, d = 5

A. 865

B. 955

C. 678

D. 895

Question 15 of 20

5.0 Points

Write the first four terms of the following sequence whose general term is given.

an = 3n + 2

A. 4, 6, 10, 14

B. 6, 9, 12, 15

C. 5, 8, 11, 14

D. 7, 8, 12, 15.

Question 16 of 20

5.0 Points

Write the first four terms of the following sequence whose general term is given.

an = (-3)n

A. -4, 9, -25, 31

B. -5, 9, -27, 41

C. -2, 8, -17, 81

D. -3, 9, -27, 81

Question 17 of 20

5.0 Points

The following are defined using recursion formulas. Write the first four terms of each sequence.

a1 = 7 and an = an-1 + 5 for n ≥ 2

A. 8, 13, 21, 22

B. 7, 12, 17, 22

C. 6, 14, 18, 21

D. 4, 11, 17, 20.

Question 18 of 20

5.0 Points

The following are defined using recursion formulas. Write the first four terms of each sequence.

a1 = 3 and an = 4an-1 for n ≥ 2

A. 3, 12, 48, 192

B. 4, 11, 58, 92

C. 3, 14, 79, 123

D. 5, 14, 47, 177

Question 19 of 20

5.0 Points

Write the first four terms of the following sequence whose general term is given.

an = 3n

A. 3, 9, 27, 81

B. 4, 10, 23, 91

C. 5, 9, 17, 31

D. 4, 10, 22, 41

Question 20 of 20

5.0 Points

The following are defined using recursion formulas. Write the first four terms of each sequence.

a1 = 4 and an = 2an-1 + 3 for n ≥ 2

A. 4, 15, 35, 453

B. 4, 11, 15, 13

C. 4, 11, 25, 53

D. 3, 19, 22, 53