Tennessee TCAP 2021
Algebra II

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Tennessee Comprehensive Assessment Program

TCAP

Algebra II
Item Release

TN Department of Education

TN0001704_2

00. The first three terms of a numerical sequence are given.

64,32,16,. . .

Which formula represents the n^{th} term of this sequence?

A. $a_n = \left(\frac{1}{2}\right)64^{n-1}$

B. $a_n = 64\left(\frac{1}{2}\right)^{n-1}$

C. $a_n = n(64)^{\frac{1}{2}}$

D. $a_n = 64\left(\frac{1}{2}\right)^{n}$

TN0001722_2

00. Given $f(x) = 5x - 7$, what is $f^{-1}(x)$?

A. $f^{-1}(x) = \frac{1}{5}x - \frac{7}{5}$

B. $f^{-1}(x) = \frac{1}{5}x + \frac{7}{5}$

C. $f^{-1}(x) = -5x + 7$

D. $f^{-1}(x) = -7x + 5$

TN0031939_2

00. If $(x + 7)$ is a factor of $h(x)$, what is the remainder of $\frac{h(x)}{(x + 7)}$?

A. -7

B. 0

C. 1

D. 7

TN0031950_2,5

00. What are the solutions to this equation?

$$2x^2 - 5x = 12$$

Select the **two** that apply.

A. $x = -3$

B. $x = -\frac{3}{2}$

C. $x = \frac{2}{3}$

D. $x = \frac{3}{2}$

E. $x = 4$

TN0032247_4

00. Jenny is arranging rows of chairs for the student play.

- There are 7 chairs in the first row.
- Each row behind the first row has 2 more chairs than the previous row.

Which equation represents the number of chairs, c, in row r?

A. $c = (2 \times 7)r$

B. $c = 7 + 2 + r$

C. $c = 7 + (r - 1)$

D. $c = 7 + 2(r - 1)$

TN0065816_3,4

00. Which binomials are factors of the given polynomial?

$$2x^4 + 5x^2 - 12$$

Select **all** that apply.

A. $(x - 2)$

B. $(x + 2)$

C. $(x^2 + 4)$

D. $(2x^2 - 3)$

E. $(2x^2 + 3)$

TN0065828_4

00. Given: $\frac{x^2 - 16}{x^3 + 64}$

Which expression is equivalent to the given expression, if the denominator does not equal 0?

A. $\frac{1}{x - 4}$

B. $\frac{1}{x + 4}$

C. $\frac{x + 4}{x^2 - 4x + 16}$

D. $\frac{x - 4}{x^2 - 4x + 16}$

TN0069433_3,4

00. The equation of a function is shown.

$$y - 10 = -\frac{1}{3}x^2 + \frac{1}{3}x$$

Which statements correctly describe the zeros and shape of the graph of the function?

Select the **two** that apply.

A. The zeros of the function are (0, −5) and (0, 6).

B. The zeros of the function are (5, 0) and (−6, 0).

C. The zeros of the function are (−5, 0) and (6, 0).

D. The graph is a parabola that opens downward.

E. The graph is a parabola that opens upward.

TN0069438_1

00. What are the values of $\sin\theta$ and $\cos\theta$ when $\theta = \frac{7\pi}{6}$?

A. $\sin\theta = -\frac{1}{2}$ and $\cos\theta = -\frac{\sqrt{3}}{2}$

B. $\sin\theta = -\frac{\sqrt{3}}{2}$ and $\cos\theta = -\frac{1}{2}$

C. $\sin\theta = -\frac{1}{2}$ and $\cos\theta = \frac{\sqrt{3}}{2}$

D. $\sin\theta = \frac{1}{2}$ and $\cos\theta = -\frac{\sqrt{3}}{2}$

TN0069449_1

00. A farmer has some cows and horses. All the animals are either brown or black. The table shows how many of each animal is on the farm.

Farm Animals

	Brown	Black
Cows	3	5
Horses	4	8

One animal is selected randomly. What is the probability of choosing an animal that is black or of choosing a cow?

A. 0.80

B. 0.65

C. 0.40

D. 0.20

TN0069486_2

00. A function $k(x)$ is defined as $k(x) = \sqrt{2 - x}$. What is the domain of $k(x)$?

A. $(-\infty, -2]$

B. $(-\infty, 2]$

C. $[-2, \infty)$

D. $[2, \infty)$

TN0069519_2

00. A counselor determined that 60% of the senior class had taken a precalculus course and that 15% of the senior class had taken both a precalculus course and a statistics course. What percentage of seniors who took a precalculus course also took a statistics course?

A. 9%

B. 25%

C. 45%

D. 75%

TN0073698_3

00. The given functions will be graphed on a coordinate plane.

$$f(x) = 3\log(x+2) \quad g(x) = x^3 - 2x^2 - 5x - 1$$

Which statement describes the relationship between the graphs of the two functions and the solutions to the equation $3\log(x+2) = x^3 - 2x^2 - 5x - 1$?

A. The solutions are the x-intercepts of the graphs.

B. The solutions are the y-intercepts of the graphs.

C. The solutions are the x-coordinates of the points of intersection of the graphs.

D. The solutions are the y-coordinates of the points of intersection of the graphs.

TN0075305_3

00. Which expression is equivalent to $\frac{2n^4 - 1}{n^4 + 3}$ if the denominator does not equal 0?

A. $\frac{2n^4}{n^4} - \frac{1}{3}$

B. $\frac{n^4 + 3}{n^4 + 3} + \frac{n^4 - 2}{n^4 + 3}$

C. $\frac{2n^4 + 6}{n^4 + 3} - \frac{7}{n^4 + 3}$

D. $\frac{2n^4 - 1}{n^4} + \frac{2n^4 - 1}{3}$

TN0075354_2

00. The number of hours, t, it takes a boat to travel 15 miles upstream is represented by the given equation.

$$t = \frac{15}{r - c}$$

Which equation represents the rate of the current, c, in terms of r, the rate of the boat, and t?

A. $c = \frac{15 - rt}{t}$

B. $c = \frac{rt - 15}{t}$

C. $c = -15 + r + t$

D. $c = 15 - r - t$

TN0075718_3

00. A system of equations is given.

$$\begin{cases} 3x + y = 6 \\ 6x - y + 4z = 13 \\ 7x + 2z = 7 \end{cases}$$

What is the x-value of the solution to the system?

A. 9

B. 7

C. -1

D. -5

TN0085446_4

00. If $f(x) = x^5 - 4x^2$, then $f(i)$ is equivalent to which expression?

A. $-4 - i$

B. $-4 + i$

C. $4 - i$

D. $4 + i$

Metadata- Math

Items

Page Number	UIN	Grade	Item Type	Key	DOK	TN Standards	Calculator
4	TN0001704	Algebra II	MC	B	2	A2.F.BF.A.2	Y
5	TN0001722	Algebra II	MC	B	2	A2.F.BF.B.4a	Y
6	TN0031939	Algebra II	MC	B	2	A2.A.APR.A.1	N
7	TN0031950	Algebra II	MS	B,E	2	A2.A.REI.B.3a	Y
8	TN0032247	Algebra II	MC	D	2	A2.F.LE.A.1	Y
9	TN0065816	Algebra II	MS	C,D	2	A2.A.SSE.A.1	N
10	TN0065828	Algebra II	MC	D	2	A2.A.APR.C.4	Y
11	TN0069433	Algebra II	MS	C,D	2	A2.A.APR.A.2	Y
12	TN0069438	Algebra II	MC	A	2	A2.F.TF.B.3a	Y
13	TN0069449	Algebra II	MC	A	2	A2.S.CP.B.6	Y
14	TN0069486	Algebra II	MC	B	2	A2.F.IF.B.3a	Y
15	TN0069519	Algebra II	MC	B	2	A2.S.CP.B.5	Y
16	TN0073698	Algebra II	MC	C	2	A2.A.REI.D.6	Y
17	TN0075305	Algebra II	MC	C	2	A2.A.SSE.A.1	N
18	TN0075354	Algebra II	MC	B	2	A2.A.CED.A.2	Y
19	TN0075718	Algebra II	MC	C	2	A2.A.REI.C.4	Y
20	TN0085446	Algebra II	MC	D	3	A2.N.CN.A.1	N

Metadata Definitions:

UIN	Unique letter/number code used to identify the item.
Grade	Grade level or Course.
Item Type	Indicates the type of item. MC= Multiple Choice; MS= Multiple Select
Key	Correct answer. This may be blank for constructed response items where students write or type their responses.
DOK	Depth of Knowledge (cognitive complexity) is measured on a three-point scale. 1 = Recall or simple reproduction of information; 2 = Skills and concepts: comprehension and processing of text; 3 = Strategic thinking, prediction, elaboration.
TN Standards	Primary educational standard assessed.
Calculator	Y for items that permit calculator use.