

Made By : Mrs. Hanan Toubeh

ZAYED COMPLEX - ALSAAF

MATH EOT BOOKLET

GRADE 11 ADVANCE

TERM 1

البداهة
بمنهج
من المهارة إلى الصدارة



WRITING PART



ألهم العالم *

بالحاني

من المهارة إلى الصدارة

SOLVING EXPONENTIAL EQUATIONS AND INEQUALITIES

5.2

Solve exponential equations in one variable.

PRACTICE QUESTION (1 – 6)

Solve each equation.

1. $25^{2x+3} = 25^{5x-9}$

2. $9^{8x-4} = 81^{3x+6}$

3. $4^{x-5} = 16^{2x-31}$

4. $4^{3x-3} = 8^{4x-4}$

5. $9^{-x+5} = 27^{6x-10}$

6. $125^{3x-4} = 25^{4x+2}$

PROPERTIES OF LOGARITHMS

6.2

Solve logarithmic equations using properties of equality.

PART A – PRACTICE QUESTIONS 7 – 12

Solve each equation.

7. $\log_4 (2x^2 - 4) = \log_4 2x$

8. $\log_5 (x^2 - 6) = \log_5 x$

9. $\log_3 (x^2 - 8) = \log_3 2x$

10. $\log_4 (2x^2 - 20) = \log_4 6x$

11. $\log_2 (6x^2 + 1) = \log_2 5x$

12. $\log_6 (6x^2 - 3) = \log_6 7x$

ابدأها
بتميز

ابدأها
بعزيمة

ابدأها
بطموح

ابدأها
بنقطة

PROPERTIES OF LOGARITHMS

6.2

Simplify and evaluate expressions by using the properties of logarithms

PART B – PRACTICE QUESTIONS 13 – 24

Use $\log_4 2 = 0.5$, $\log_4 3 \approx 0.7925$, and $\log_4 5 \approx 1.1610$ to approximate the value of each expression.

13. $\log_4 30$

14. $\log_4 20$

15. $\log_4 \frac{2}{3}$

16. $\log_4 \frac{4}{3}$

17. $\log_4 9$

18. $\log_4 8$

PROPERTIES OF LOGARITHMS

6.2

Simplify and evaluate expressions by using the properties of logarithms

PART B – PRACTICE QUESTIONS 13 – 24

Use $\log_2 3 \approx 1.5850$ and $\log_2 5 \approx 2.3219$ to approximate the value of each expression.

19. $\log_2 25$

20. $\log_2 27$

21. $\log_2 125$

22. $\log_2 625$

23. $\log_2 81$

24. $\log_2 243$

Graphing reciprocal functions

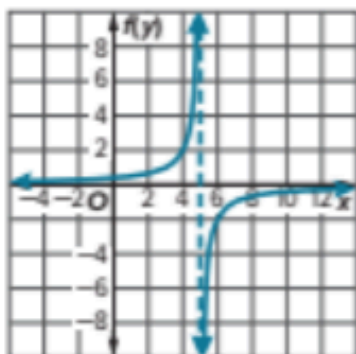
7.3

Graph and write reciprocal functions by using transformations

PRACTICE QUESTIONS 17 – 22

Identify the values of a , h , and k . Then write a function for the graph $g(x) = \frac{a}{x-h} + k$.

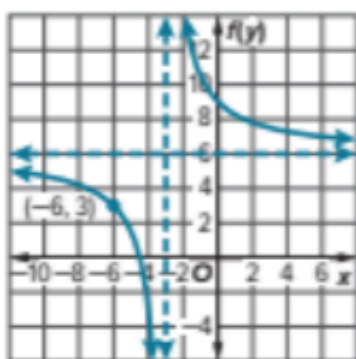
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18.



19.



Graphing reciprocal functions

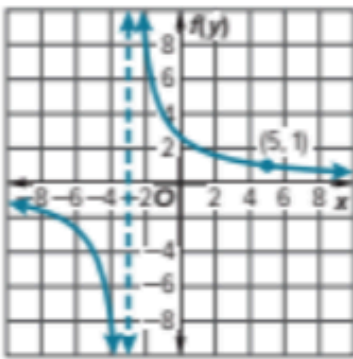
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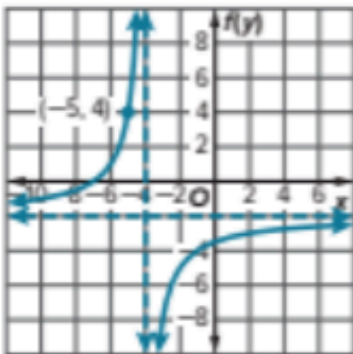
PRACTICE QUESTIONS 17 – 22

Identify the values of a , h , and k . Then write a function for the graph $g(x) = \frac{a}{x-h} + k$.

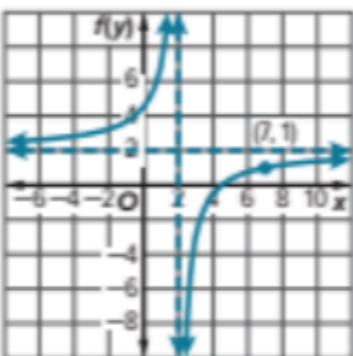
20.



21.



22.



Normal distribution

8.4

Analyze standardized data and distributions by using **z-values** .(The table will be provided in the question)

EXAMPLE 6, 7, 8 AND PRACTICE QUESTIONS 8-14

Find z if $X = 24$, $\mu = 19$, and $\sigma = 3.8$.

Use a Standard Normal Distribution Table to find the area under the normal curve within the interval $z < -1.18$.

Step 1 Identify the probability for the left endpoint, $z = -1.18$.

Step 2 Identify the area under the curve within the interval.

Normal distribution

8.4

Analyze standardized data and distributions by using z-values .(The table will be provided in the question)

EXAMPLE 6, 7, 8 AND PRACTICE QUESTIONS 8-14

INTERNET TRAFFIC The number of daily hits to a local news Web site is normally distributed with $\mu = 98,452$ hits and $\sigma = 10,325$ hits. Find the probability that the Web site will get at least 100,000 hits on a given day, $P(X > 100,000)$.

Visits Summary



Visits Summary - Last 30 Days

Visitor Demographics



Views by Category



Step 1 Find the corresponding z-value for $X = 100,000$.

Step 2 Find the probability.

Normal distribution

8.4

Analyze standardized data and distributions by using z-values .(The table will be provided in the question)

EXAMPLE 6, 7, 8 AND PRACTICE QUESTIONS 8-14

Find the z-value for each standard normal distribution.

8. $\sigma = 9.8$, $X = 55.4$, and $\mu = 68.34$

9. $\sigma = 11.6$, $X = 42.80$, and $\mu = 68.2$

10. $\sigma = 11.9$, $X = 119.2$, and $\mu = 112.4$

Normal distribution

8.4

Analyze standardized data and distributions by using z-values .(The table will be provided in the question)

EXAMPLE 6, 7, 8 AND PRACTICE QUESTIONS 8-14

Use a table to find the area under the normal curve for each interval.

11. $z > 0.58$

12. $z < -1.56$

13. $-2.29 < z < 2.76$

Normal distribution

8.4

Analyze standardized data and distributions by using z-values .(The table will be provided in the question)

EXAMPLE 6, 7, 8 AND PRACTICE QUESTIONS 8-14

14. **TESTING** The scores on a test administered to prospective employees are normally distributed with a mean of 100 and a standard deviation of 12.3.
- What percent of the scores are between 70 and 80?
 - What percent of the scores are over 115?
 - If 75 people take the test, how many would you expect to score lower than 75?

Graphing other trigonometric functions

9.5

Graph and analyze tangent functions. (No need for graphing calculator)

EXAMPLE 1 AND 2, PRACTICE QUESTIONS 1–6

Find the period, asymptotes, x-intercepts, midline, and transformations of $y = \tan 3x$. Then graph the function.

Find the period, asymptotes, x-intercepts, midline, and transformations of $y = -\frac{1}{3} \tan 2x$. Then graph the function.

Graphing other trigonometric functions

9.5

Graph and analyze tangent functions. (No need for graphing calculator)

EXAMPLE 1 AND 2, PRACTICE QUESTIONS 1–6

Find the period, asymptotes, x-intercepts, midline, and transformations of each tangent function. Then graph the function.

1. $y = \tan 5x$

2. $y = \tan 4x$

Graphing other trigonometric functions

9.5

Graph and analyze tangent functions. (No need for graphing calculator)

EXAMPLE 1 AND 2, PRACTICE QUESTIONS 1–6

Find the period, asymptotes, x-intercepts, midline, and transformations of each tangent function. Then graph the function.

3. $y = \tan 2x$

4. $y = \frac{1}{2} \tan x$

Graphing other trigonometric functions

9.5

Graph and analyze tangent functions. (No need for graphing calculator)

EXAMPLE 1 AND 2, PRACTICE QUESTIONS 1–6

Find the period, asymptotes, x-intercepts, midline, and transformations of each tangent function. Then graph the function.

5. $y = 2 \tan \frac{1}{2}x$

6. $y = -\frac{1}{2} \tan 2x$

MCQ PART



أحدث لفظة
المستقبل
من المهارة إلى الصدارة

GRAPHING EXPONENTIAL FUNCTION

5.1

Graph exponential growth functions.

PRACTICE QUESTIONS 1-10 AND TEST PRACTICE QUESTION 1

Graph each function. Find the domain, range, y-intercept, asymptote, and end behavior.

1. $f(x) = 3^x$

2. $f(x) = 5^x$

3. $f(x) = 1.5^x$

4. $f(x) = \left(\frac{5}{2}\right)^x$

GRAPHING EXPONENTIAL FUNCTION

5.1

Graph exponential growth functions.

PRACTICE QUESTIONS 1-10 AND TEST PRACTICE QUESTION 1

Graph each function.

5. $f(x) = 2(3)^x$

6. $f(x) = -2(4)^x$

7. $f(x) = 4^{x+1} - 5$

8. $f(x) = 3^{2x} + 1$

9. $f(x) = -0.4(3)^{x+2} + 4$

10. $f(x) = 1.5(2)^x + 6$

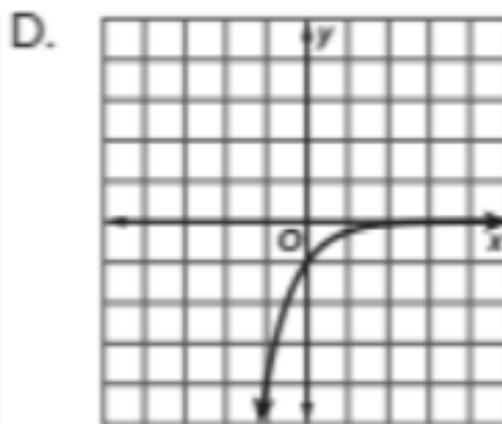
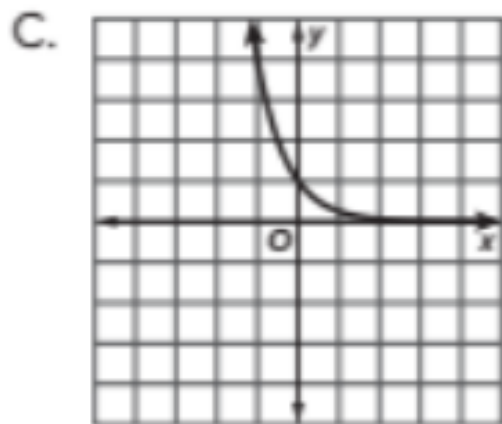
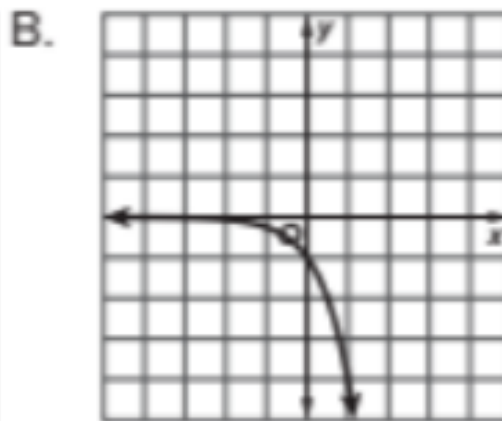
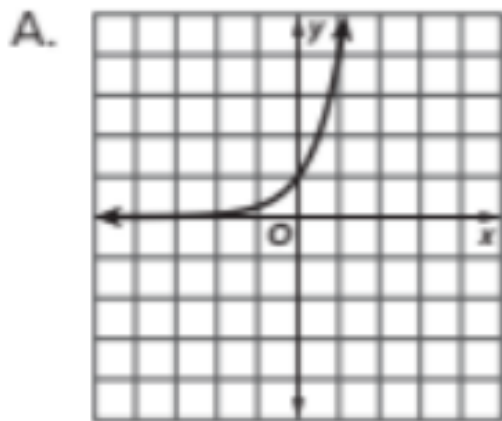
GRAPHING EXPONENTIAL FUNCTION

5.1

Graph exponential growth functions.

PRACTICE QUESTIONS 1-10 AND TEST PRACTICE QUESTION 1

1. MULTIPLE CHOICE Select the graph of $f(x) = 4^x$. (Lesson 5-1)



SPECIAL EXPONENTIAL FUNCTIONS

5.3

Analyze expressions and functions involving the natural base e .

EXAMPLE 2 AND PRACTICE QUESTIONS 10 –12

Consider $g(x) = -2e^{x-3} + 2$.

Part A Graph the function.

Part B Determine the domain and range.

Part C Find the average rate of change.

SPECIAL EXPONENTIAL FUNCTIONS

5.3

Analyze expressions and functions involving the natural base e .

EXAMPLE 2 AND PRACTICE QUESTIONS 10 –12

10. Consider the function $f(x) = 3e^{x-1} + 3$.
- Graph the function.
 - Determine domain and range.
 - Find the average rate of change over the interval $[-5, -2]$.

SPECIAL EXPONENTIAL FUNCTIONS

5.3

Analyze expressions and functions involving the natural base e .

EXAMPLE 2 AND PRACTICE QUESTIONS 10 –12

11. Consider the function $f(x) = 4e^{2x} - 1$.

- Graph the function.
- Determine domain and range.
- Find the average rate of change over the interval $[-3, -1]$.

SPECIAL EXPONENTIAL FUNCTIONS

5.3

Analyze expressions and functions involving the natural base e .

EXAMPLE 2 AND PRACTICE QUESTIONS 10 –12

12. Consider the function $f(x) = -2e^{x+3} + 2$.

- Graph the function.
- Determine domain and range.
- Find the average rate of change over the interval $[-7, -4]$.

LOGARITHMS AND LOGARITHMIC FUNCTIONS

6.1

Write logarithmic expressions in exponential form and write exponential expressions in logarithmic form.

PRACTICE QUESTIONS 1–12

Write each equation in exponential form.

1. $\log_{15} 225 = 2$

2. $\log_3 \frac{1}{27} = -3$

3. $\log_5 \frac{1}{25} = 2$

4. $\log_3 243 = 5$

5. $\log_4 64 = 3$

6. $\log_4 32 = \frac{5}{2}$

Write each equation in logarithmic form.

7. $2^7 = 128$

8. $3^{-4} = \frac{1}{81}$

9. $7^{-2} = \frac{1}{49}$

10. $\left(\frac{1}{7}\right)^3 = \frac{1}{343}$

11. $2^9 = 512$

12. $64^{\frac{2}{3}} = 16$

COMMON LOGARITHMS

6.3

Evaluate logarithmic expressions by using the Change of Base Formula.

EXAMPLE 5 AND PRACTICE QUESTIONS 21 – 26

Evaluate $\log_2 11$ by writing it in terms of common logarithms. Round to the nearest ten-thousandth.

Express each logarithm in terms of common logarithms. Then approximate its value to the nearest ten-thousandth.

21. $\log_4 22$

22. $\log_{12} 200$

23. $\log_2 50$

24. $\log_8 15$

25. $\log_3 2$

26. $\log_5 0.4$

NATURAL LOGARITHMS

6.4

Simplify expressions with natural logarithms

EXAMPLE 3 AND PRACTICE QUESTIONS 19–27

Write $\frac{1}{3} \ln 8 - \ln 3 + \ln 9$ as a single logarithm.

Write each expression as a single logarithm.

19. $3 \ln 3 - \ln 9$

20. $4 \ln 16 - \ln 256$

21. $2 \ln x + 2 \ln 4$

22. $3 \ln 4 + 3 \ln 3$

23. $\ln 125 - 2 \ln 5$

24. $3 \ln 10 + 2 \ln 100$

25. $4 \ln \frac{1}{3} - 6 \ln \frac{1}{9}$

26. $7 \ln \frac{1}{2} + 5 \ln 2$

27. $8 \ln x - 4 \ln 5$

USING EXPONENTIAL AND LOGARITHMIC FUNCTIONS

6.5

Write and solve exponential growth equations and inequalities.

EXAMPLE 1 AND PRACTICE QUESTIONS 1 AND 2

POPULATION In 2016, the population of Florida was 20.61 million people. In 2000, it was 15.98 million.

Part A Write an exponential growth equation.

Part B Predict when the population will reach 25 million people.

Part C Compare the populations of Florida and California.

USING EXPONENTIAL AND LOGARITHMIC FUNCTIONS

6.5

Write and solve exponential growth equations and inequalities.

EXAMPLE 1 AND PRACTICE QUESTIONS 1 AND 2

SCIENCE An experiment starts with 20 bacteria A cells. After 45 minutes, there are 710 bacteria A cells.

Part A

Write the equation that models the number of bacteria A cells y after t minutes. Round the value of k to the nearest thousandth.

Part B

After how many minutes will there be 1000 bacteria A cells? Round to the nearest tenth if necessary.

_____ minutes

Part C

Bacteria B grows exponentially according to the model $y = 52e^{0.064t}$. After how many minutes will there be more bacteria A cells than bacteria B cells? Round to the nearest tenth if necessary.

_____ minutes

USING EXPONENTIAL AND LOGARITHMIC FUNCTIONS

6.5

Write and solve exponential growth equations and inequalities.

EXAMPLE 1 AND PRACTICE QUESTIONS 1 AND 2

Example 1

1. **POPULATION** In 2000, the world population was estimated to be 6.124 billion people. In 2005, it was 6.515 billion.
 - a. Write an exponential growth equation to represent the population y in billions t years after 2000.
 - b. Use the equation to predict the year in which the world population reached 7.5 billion people.

USING EXPONENTIAL AND LOGARITHMIC FUNCTIONS

6.5

Write and solve exponential growth equations and inequalities.

EXAMPLE 1 AND PRACTICE QUESTIONS 1 AND 2

2. **CONSUMER AWARENESS** Jason wants to buy a new HD television but he thinks that if he waits, the quality of HD televisions will improve. The television he wants to buy costs \$2500 now, and based on pricing trends, Jason thinks that the price will increase by 4% each year.
- Write an exponential growth equation to represent the price y of a new HD television t years from now.
 - Use the equation to predict when a new HD television will cost \$3000.
 - Jason decides to wait to buy a new television and saves his money. He puts \$2200 in a savings account with 4.7% annual interest compounded continuously. Determine when the amount in his savings will exceed the cost of a new television.

MULTIPLYING AND DIVIDING RATIONAL EXPRESSIONS

7.1

Simplify rational expressions.

PRACTICE QUESTIONS 1–10

Simplify each expression, and state when the original expression is undefined.

1. $\frac{x(x-3)(x+6)}{x^2+x-12}$

2. $\frac{y^2(y^2+3y+2)}{2y(y-4)(y+2)}$

3. $\frac{(x^2-9)(x^2-z^2)}{4(x+z)(x-3)}$

4. $\frac{(x^2-16x+64)(x+2)}{(x^2-64)(x^2-6x-16)}$

MULTIPLYING AND DIVIDING RATIONAL EXPRESSIONS

7.1

Simplify rational expressions.

PRACTICE QUESTIONS 1-10

Simplify each expression, and state when the original expression is undefined.

5. $\frac{x^2(x+2)(x-4)}{6x(x^2+x-20)}$

6. $\frac{3y(y-8)(y^2+2y-24)}{15y^2(y^2-12y+32)}$

Simplify each expression.

7. $\frac{x^2-5x-14}{28+3x-x^2}$

8. $\frac{9x^2-x^3}{x^2-3x-54}$

MULTIPLYING AND DIVIDING RATIONAL EXPRESSIONS

7.1

Simplify rational expressions.

PRACTICE QUESTIONS 1–10

Simplify each expression.

9.
$$\frac{(x - 4)(x^2 + 2x - 48)}{(36 - x^2)(x^2 + 4x - 32)}$$

10.
$$\frac{16 - c^2}{c^2 + c - 20}$$

ADDING AND SUBTRACTING RATIONAL EXPRESSIONS

7.2

Simplify rational expressions by adding and subtracting.

PRACTICE QUESTIONS 1-12

Simplify each expression.

1. $\frac{3}{x} + \frac{5}{y}$

2. $\frac{3}{8p^2r} + \frac{5}{4p^2r}$

3. $\frac{2c-7}{3} + 4$

4. $\frac{2}{m^2p} + \frac{5}{p}$

ADDING AND SUBTRACTING RATIONAL EXPRESSIONS

7.2

Simplify rational expressions by adding and subtracting.

PRACTICE QUESTIONS 1-12

Simplify each expression.

5. $\frac{12}{5y^2} - \frac{2}{5yz}$

6. $\frac{7}{4gh} + \frac{3}{4h^2}$

7. $\frac{3}{w-3} - \frac{2}{w^2-9}$

8. $\frac{3t}{2-x} + \frac{5}{x-2}$

ADDING AND SUBTRACTING RATIONAL EXPRESSIONS

7.2

Simplify rational expressions by adding and subtracting.

PRACTICE QUESTIONS 1-12

Simplify each expression.

9. $\frac{k}{k-n} - \frac{k}{n-k}$

10. $\frac{4z}{z-4} + \frac{z+4}{z+1}$

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

12. $\frac{3}{y^2+y-12} - \frac{2}{y^2+6y+8}$

GRAPHING RATIONAL FUNCTIONS

7.4

Graph and analyze rational functions with oblique asymptotes.

PRACTICE QUESTIONS 11 – 22

Find the zeros and asymptotes of each function. Then graph each function.

11. $f(x) = \frac{(x-4)^2}{x+2}$

12. $f(x) = \frac{(x+3)^2}{x-5}$

13. $f(x) = \frac{6x^2 + 4x + 2}{x + 2}$

14. $f(x) = \frac{2x^2 + 7x}{x - 2}$

GRAPHING RATIONAL FUNCTIONS

7.4

Graph and analyze rational functions with oblique asymptotes.

PRACTICE QUESTIONS 11 – 22

Find the zeros and asymptotes of each function. Then graph each function.

15. $f(x) = \frac{3x^2 + 8}{2x - 1}$

16. $f(x) = \frac{2x^2 + 5}{3x + 4}$

Graph each function. Find the point discontinuity.

17. $f(x) = \frac{x^2 - 2x - 8}{x - 4}$

18. $f(x) = \frac{x^2 + 4x - 12}{x - 2}$

GRAPHING RATIONAL FUNCTIONS

7.4

Graph and analyze rational functions with oblique asymptotes.

PRACTICE QUESTIONS 11 – 22

Graph each function. Find the point discontinuity.

19. $f(x) = \frac{x^2 - 25}{x + 5}$

20. $f(x) = \frac{x^2 - 64}{x - 8}$

21. $f(x) = \frac{(x - 4)(x^2 - 4)}{x^2 - 6x + 8}$

22. $f(x) = \frac{(x + 5)(x^2 + 2x - 3)}{x^2 + 8x + 15}$

VARIATIONS

7.5

Recognize and solve direct and joint variation equations.

PRACTICE QUESTIONS 7 – 12

If a varies jointly as b and c , find a when $b = 4$ and $c = -3$.

7. $a = -96$ when $b = 3$ and $c = -8$

8. $a = -60$ when $b = -5$ and $c = 4$

9. $a = -108$ when $b = 2$ and $c = 9$

10. $a = 24$ when $b = 8$ and $c = 12$

VARIATIONS

7.5

Recognize and solve direct and joint variation equations.

PRACTICE QUESTIONS 7 – 12

11. If y varies jointly as x and z , and $y = 18$ when $x = 2$ and $z = 3$, find y when x is 5 and z is 6.

12. If y varies jointly as x and z , and $y = -16$ when $x = 4$ and $z = 2$, find y when x is -1 and z is 7.

SOLVING RATIONAL EQUATIONS AND INEQUALITIES

7.6

Solve rational equations in one variable

PRACTICE QUESTIONS 1–12

Solve each equation. Check your solutions.

1. $\frac{2x+3}{x+1} = \frac{3}{2}$

2. $\frac{-12}{y} = y - 7$

3. $\frac{9}{x-7} - \frac{7}{x-6} = \frac{13}{x^2 - 13x + 42}$

4. $\frac{13}{y+3} - \frac{12}{y+4} = \frac{18}{y^2 + 7y + 12}$

SOLVING RATIONAL EQUATIONS AND INEQUALITIES

7.6

Solve rational equations in one variable

PRACTICE QUESTIONS 1–12

Solve each equation. Check your solutions.

5. $\frac{14}{x-2} - \frac{18}{x+1} = \frac{22}{x^2 - x - 2}$

6. $\frac{2}{a+2} + \frac{10}{a+5} = \frac{36}{a^2 + 7a + 10}$

7. $\frac{x}{2x-1} + \frac{3}{x+4} = \frac{21}{2x^2 + 7x - 4}$

8. $\frac{2}{y-5} + \frac{y-1}{2y+1} = \frac{2}{2y^2 - 9y - 5}$

SOLVING RATIONAL EQUATIONS AND INEQUALITIES

7.6

Solve rational equations in one variable

PRACTICE QUESTIONS 1–12

Solve each equation. Check your solutions.

9. $\frac{x-8}{2x+2} + \frac{x}{2x+2} = \frac{2x-3}{x+1}$

10. $\frac{12p+19}{p^2+7p+12} - \frac{3}{p+3} = \frac{5}{p+4}$

11. $\frac{2f}{f^2-4} + \frac{1}{f-2} = \frac{2}{f+2}$

12. $\frac{8}{t^2-9} + \frac{4}{t+3} = 1$

RANDOM SAMPLING

8.1

Classify sampling methods and identify bias in samples and survey questions PRACTICE QUESTIONS 4 – 10

Identify each sample or question as *biased* or *unbiased*. Explain your reasoning.

4. A random sample of eight people is asked to select their favorite food for a survey about Americans' food preferences.
5. Every tenth student at band camp is asked to name his or her favorite band for a survey about the campers.
6. Every fifth person entering a museum is asked to name his or her favorite type of book to read for a survey about reading interests of people in the city.
7. Do you think that the workout facility needs a new treadmill and racquetball court?

ابدأها
بتميز

ابدأها
بعزيمة

ابدأها
بطموح

ابدأها
بنقطة

RANDOM SAMPLING

8.1

Classify sampling methods and identify bias in samples and survey questions

PRACTICE QUESTIONS 4 – 10

Identify each sample or question as *biased* or *unbiased*. Explain your reasoning.

8. Which is your favorite type of music, pop, or country?

9. Are you a member of any after-school clubs?

10. Don't you agree that employees should pack their lunch?



USING STATISTICAL EXPERIMENTS

8.2

Compare theoretical and experimental probabilities

PRACTICE QUESTIONS 1 – 3 AND TEST PRACTICE 4

1. A student spun a spinner with 4 equal sections 100 times and recorded the results.

- a. Find the theoretical probability of spinning blue.
Write your answer as a percentage rounded to the nearest tenth, if necessary.

- b. Find the experimental probability of spinning blue.
Write your answer as a percentage rounded to the nearest tenth, if necessary.

Spinner Section	Frequency
Red	35
Blue	38
Green	13
Yellow	14

2. A student flipped a coin 125 times and recorded the results.

- a. Find the theoretical probability of the coin landing on heads. Write your answer as a percentage rounded to the nearest tenth, if necessary.

- b. Find the experimental probability of the coin landing on heads. Write your answer as a percentage rounded to the nearest tenth, if necessary.

Coin Result	Frequency
Heads	73
Tails	52

USING STATISTICAL EXPERIMENTS

8.2

Compare theoretical and experimental probabilities

PRACTICE QUESTIONS 1 – 3 AND TEST PRACTICE 4

3. A fair 6-sided die is rolled 150 times.

- Find the theoretical probability of rolling a 3. Write your answer as a percentage rounded to the nearest tenth, if necessary.
- Find the experimental probability of rolling a 3. Write your answer as a percentage rounded to the nearest tenth, if necessary.

Number on Die	Frequency
1	32
2	18
3	27
4	16
5	33
6	24

4. **MULTIPLE CHOICE** Leonard randomly selected a card from a standard deck of playing cards, recorded the suit, and returned the card. He followed this set of steps 120 times. The results are shown.

Suit	Frequency
Heart	28
Diamond	37
Spade	34
Club	21

Which statement about the results is true?

ANALYZING POPULATION DATA

8.3

Describe distributions by finding their mean and standard deviation. (No need for graphing calculator)

EXAMPLE 1 AND PRACTICE QUESTIONS 1 – 2 / TEST PRACTICE 7

TRACK A coach recorded the times of each track member for a 400-meter race. Find and interpret the standard deviation of the data.

400m Race Times (seconds)	
57.1	55.9
59.3	54.9
54.6	50.3
55.2	53.5

ANALYZING POPULATION DATA

8.3

Describe distributions by finding their mean and standard deviation. (No need for graphing calculator)

EXAMPLE 1 AND PRACTICE QUESTIONS 1 – 2 / TEST PRACTICE 7

1. **BARBER** A barber wants to purchase new professional shears from a Web site. The prices of all of the shears are shown in the table. Use the standard deviation formula to find and interpret the standard deviation of the data. Round your answers to the nearest cent.

Cost of Shears (\$)			
50	165	55	79
84	68	38	42

2. **READING** Ms. Sanchez keeps track of the total number of books each student in the book club reads during the school year. Use the standard deviation formula to find and interpret the standard deviation of the data. Round your answers to the nearest tenth.

Books Read		
9	6	12
8	9	14
10	13	8

ANALYZING POPULATION DATA

8.3

Describe distributions by finding their mean and standard deviation. (No need for graphing calculator)

EXAMPLE 1 AND PRACTICE QUESTIONS 1 – 2 / TEST PRACTICE 7

7. MULTI-SELECT Zain is analyzing two sets of data. (Lesson 8-3)

Set A				
35	28	35	33	32
32	31	30	36	49
36	33	29	34	37

Set B				
22	26	26	24	27
38	35	31	22	30
24	33	30	25	38

Select all the true statements about each data set.

- A. Data set A has a higher average value.
- B. Data set B has a higher average value.
- C. Data set A is more varied.
- D. Data set B is more varied.

ANGLES AND ANGLES MEASURES

9.1

Convert between degrees and radian measures and find arc lengths by using central angles.

MIXED PRACTICE 54 – 65

REGULARITY Rewrite each degree measure in radians and each radian measure in degrees.

54. 18°

55. 6°

56. -72°

57. -820°

58. 4π

59. $\frac{5\pi}{2}$

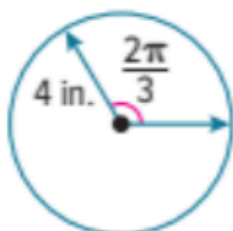
60. $-\frac{9\pi}{2}$

61. $-\frac{7\pi}{12}$

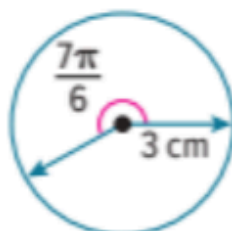
62. -270°

Find the length of each arc. Round to the nearest tenth.

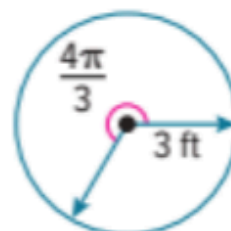
63.



64.



65.



TRIGONOMETRIC FUNCTIONS OF GENERAL ANGLES

9.2

Find values of trigonometric functions by using reference angles

PRACTICE QUESTIONS 40 – 45

PRECISION Find the exact value of each trigonometric function.

40. $\tan 330^\circ$

41. $\cos \left(-\frac{11\pi}{4}\right)$

42. $\cot 30^\circ$

43. $\csc \frac{\pi}{4}$

44. $\sin (-150^\circ)$

45. $\tan \left(-\frac{\pi}{4}\right)$

GRAPHING SINE AND COSINE FUNCTIONS

9.4

Model periodic real-world situations with sine and cosine functions. (No need for graphing calculator)

EXAMPLE 5 AND 6 / PRACTICE QUESTIONS 17 – 20

SPRINGS An object on a spring oscillates according to the function $y = 40 \cos \pi t$, where y is the distance in centimeters above its equilibrium position at time t in seconds.

Part A Find the period and frequency, and describe them in the context of the situation.

Part B Identify the domain and range in the context of the situation.

GRAPHING SINE AND COSINE FUNCTIONS

9.4

Model periodic real-world situations with sine and cosine functions. (No need for graphing calculator)

EXAMPLE 5 AND 6 / PRACTICE QUESTIONS 17 – 20

ELECTRICITY The voltage supplied by an electrical outlet can be represented by a periodic function. The voltage oscillates between -120 and 120 volts, with a frequency of 50 cycles per second. Write and graph a function for the voltage v as a function of time t .

Step 1 The voltage oscillates from -120 to 120 .

Step 2 The frequency is 50 cycles per second.

Step 3 Use t instead of x to write the function as a function of time.

GRAPHING SINE AND COSINE FUNCTIONS

9.4

Model periodic real-world situations with sine and cosine functions. (No need for graphing calculator)

EXAMPLE 5 AND 6 / PRACTICE QUESTIONS 17 – 20

17. **USE A MODEL** An object on a spring oscillates using the function $y = 25 \cos \pi t$, where y is the distance in inches from its equilibrium position in t seconds.
- Find and describe the period and frequency.
 - Identify the domain and range in the context of the situation.
18. **SWINGS** Suppose a tire swing is rotated $\frac{\pi}{5}$ radians and released. The function $y = \frac{\pi}{5} \cos 2t$ represents the displacement of the swing at time t for a frequency of radians per second.
- Find the period and frequency, and describe them in the context of the situation.
 - Identify the domain and range in the context of the situation.

GRAPHING SINE AND COSINE FUNCTIONS

9.4

Model periodic real-world situations with sine and cosine functions. (No need for graphing calculator)

EXAMPLE 5 AND 6 / PRACTICE QUESTIONS 17 – 20

19. **REASONING** A boat that is tied to a dock moves vertically up and down with the waves. Delray watches the boat for 30 seconds and notes that the boat moves up and down a total of 6 times. The difference between the boat's highest point and lowest point is 3 feet. Write and graph a trigonometric function that models the boat's vertical position x seconds after she began watching. Assume that when Delray began watching the boat, it was at its highest point and that its average vertical position was 0 feet.

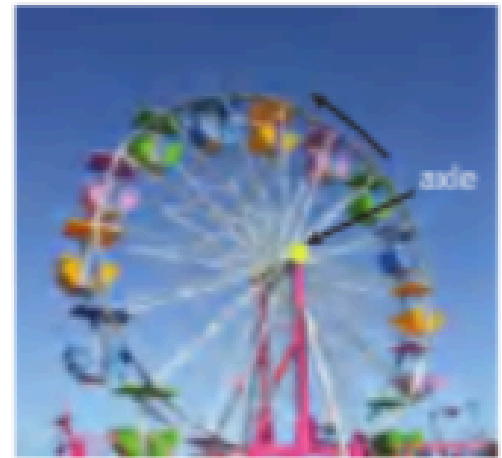
GRAPHING SINE AND COSINE FUNCTIONS

9.4

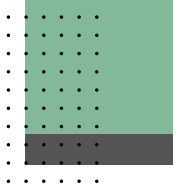
Model periodic real-world situations with sine and cosine functions. (No need for graphing calculator)

EXAMPLE 5 AND 6 / PRACTICE QUESTIONS 17 – 20

- 20. FERRIS WHEELS** A Ferris wheel at a state fair has a diameter of 65 feet and makes 4 complete revolutions each minute. Santiago boards a car of the Ferris wheel at the car's lowest point, and he rides for 2 minutes. Write and graph a trigonometric function that models his height above or below the axle of the Ferris wheel θ minutes after the ride starts.



TRANSLATION OF TRIGONOMETRIC GRAPHS



Graph vertical translations of trigonometric functions.

9.6

PRACTICE QUESTIONS 13 – 18

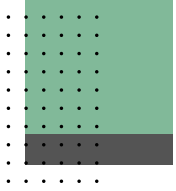
State the amplitude, period, phase shift, vertical shift, and midline equation of each function. Then graph the function and state the domain and range.

13. $y = \cos \theta + 3$

14. $y = \tan \theta - 1$

15. $y = \tan \theta + \frac{1}{2}$

TRANSLATION OF TRIGONOMETRIC GRAPHS



Graph vertical translations of trigonometric functions.

9.6

PRACTICE QUESTIONS 13 – 18

State the amplitude, period, phase shift, vertical shift, and midline equation of each function. Then graph the function and state the domain and range.

16. $y = 2 \cos \theta - 5$

17. $y = 2 \sin \theta - 4$

18. $y = \frac{1}{3} \sin \theta + 7$

ابدأها
بتميز

ابدأها
بعزيمة

ابدأها
بطموح

ابدأها
بنقطة

INVERSE TRIGONOMETRIC FUNCTIONS

9.7

Find values of angle measures by using inverse trigonometric functions

EXAMPLE 1 / PRACTICE QUESTIONS 1 – 9

Find $\tan^{-1} \sqrt{3}$. Write angle measures in degrees and radians.

Find each value. Write angle measures in degrees and radians.

1. $\cos^{-1} \left(\frac{\sqrt{3}}{2} \right)$

2. $\sin^{-1} \left(-\frac{\sqrt{3}}{2} \right)$

3. $\arccos \left(-\frac{1}{2} \right)$

INVERSE TRIGONOMETRIC FUNCTIONS

9.7

Find values of angle measures by using inverse trigonometric functions

EXAMPLE 1 / PRACTICE QUESTIONS 1 – 9

Find each value. Write angle measures in degrees and radians.

4. $\text{Arctan } \sqrt{3}$

5. $\text{Arccos} \left(-\frac{\sqrt{2}}{2} \right)$

6. $\text{Tan}^{-1}(-1)$

7. $\text{Sin}^{-1} \frac{\sqrt{2}}{2}$

8. $\text{Cos}^{-1} \left(-\frac{\sqrt{3}}{2} \right)$

9. $\text{Arcsin } 1$

GOOD LUCK

Made By : Mrs. Hanan Toubeh

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خطواتي
تخمس تفوقي
من المهارة إلى الصدارة