

Name: _____

Date: _____

1. Juan and Filipe practice at the driving range before playing golf. The number of wins and corresponding practice times for each player are shown in the table below.

	Juan Wins	Filipe Wins
Short Practice Time	8	10
Long Practice Time	15	12

Given that the practice time was long, determine the exact probability that Filipe wins the next match.

Determine whether or not the two events "Filipe wins" and "long practice time" are independent. Justify your answer.

2. The Wells family is looking to purchase a home in a suburb of Rochester with a 30-year mortgage that has an annual interest rate of 3.6%. The house the family wants to purchase is \$152,500 and they will make a \$15,250 down payment and borrow the remainder. Use the formula below to determine their monthly payment, to the *nearest dollar*.

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

M = monthly payment

P = amount borrowed

r = annual interest rate

n = total number of monthly payments

3. The conjugate of the complex expression $-5x + 4i$ is

- A. $5x - 4i$ B. $5x + 4i$
C. $-5x - 4i$ D. $-5x + 4i$

4. Solve algebraically for all values of x :

$$\sqrt{6 - 2x} + x = 2(x + 15) - 9$$

5. For any power of i , the imaginary unit, where b is a whole number, i^{4b+3} equals

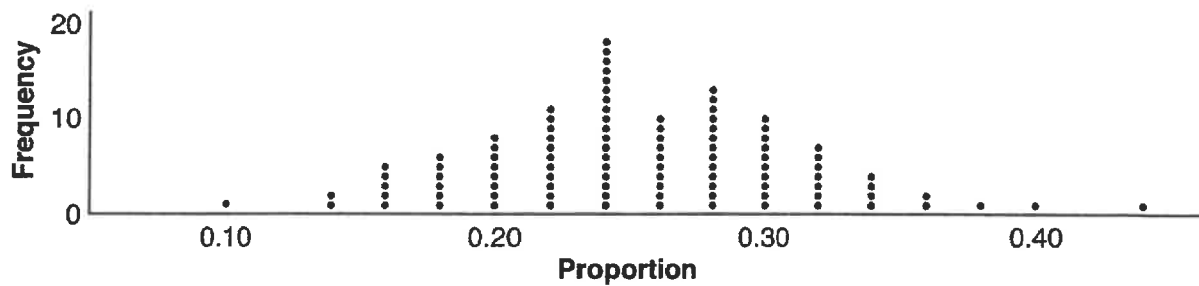
- A. 1 B. i C. -1 D. $-i$

6. Determine the quotient and remainder when $(6a^3 + 11a^2 - 4a - 9)$ is divided by $(3a - 2)$. Express your answer in the form $q(a) + \frac{r(a)}{d(a)}$.

7. What is the equation of the circle passing through the point $(-5, -2)$ whose center is at $(-2, 3)$?

- A. $(x + 5)^2 + (y + 2)^2 = 34$
- B. $(x + 5)^2 + (y + 2)^2 = 50$
- C. $(x + 2)^2 + (y - 3)^2 = 34$
- D. $(x + 2)^2 + (y - 3)^2 = 50$

8. A group of students was trying to determine the proportion of candies in a bag that are blue. The company claims that 24% of candies in bags are blue. A simulation was run 100 times with a sample size of 50, based on the premise that 24% of the candies are blue. The approximately normal results of the simulation are shown in the dot plot below.



The simulation results in a mean of 0.254 and a standard deviation of 0.060. Based on this simulation, what is a plausible interval containing the middle 95% of the data?

- A. (0.194, 0.314)
- B. (0.134, 0.374)
- C. (-0.448, 0.568)
- D. (0.254, 0.374)

9. The expression $\frac{\sqrt{5}}{7-\sqrt{5}}$ is equivalent to

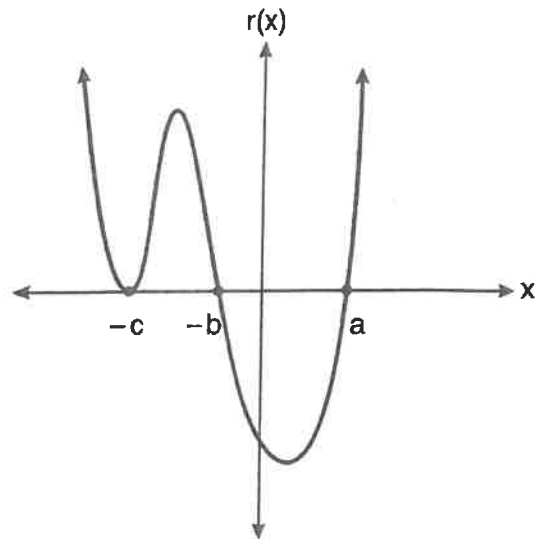
A. $\frac{7\sqrt{5}+5}{54}$

B. $\frac{7\sqrt{5}-5}{54}$

C. $\frac{7\sqrt{5}+5}{44}$

D. $\frac{7\sqrt{5}-5}{44}$

10. A sketch of $r(x)$ is shown below.



An equation for $r(x)$ could be

A. $r(x) = (x-a)(x+b)(x+c)$

B. $r(x) = (x+a)(x-b)(x-c)^2$

C. $r(x) = (x+a)(x-b)(x-c)$

D. $r(x) = (x-a)(x+b)(x+c)^2$

11. The expression $\frac{i^{16}}{i^3}$ is equivalent to

- A. 1 B. -1 C. i D. $-i$

12. Which expression is equivalent to i^{55} ?

- A. 1 B. -1 C. i D. $-i$

13. Carla wants to start a college fund for her daughter Lila. She puts \$63,000 into an account that grows at a rate of 2.55% per year, compounded monthly. Write a function, $C(t)$, that represents the amount of money in the account t years after the account is opened, given that no more money is deposited into or withdrawn from the account.

Calculate algebraically the number of years it will take for the account to reach \$100,000, to the nearest hundredth of a year.

14. Which table best represents an exponential relationship?

A.

x	y
1	8
2	4
3	2
4	1
5	$\frac{1}{2}$

B.

x	y
8	0
4	1
0	2
-4	3
-8	4

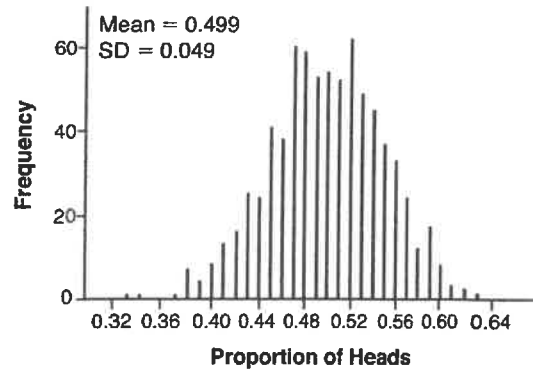
C.

x	y
0	0
1	1
2	4
3	9
4	16

D.

x	y
1	1
2	8
3	27
4	64
5	125

15. Robin flips a coin 100 times. It lands heads up 43 times, and she wonders if the coin is unfair. She runs a computer simulation of 750 samples of 100 fair coin flips. The output of the proportion of heads is shown below.



Do the results of the simulation provide strong evidence that Robin's coin is unfair? Explain your answer.

16. A multiple-choice test has 4 possible choices for each question. A person guesses on 10 questions. What is the probability the person gets *exactly* 8 questions correct?

A. ${}_{10}C_8 \left(\frac{1}{4}\right)^2 \left(\frac{3}{4}\right)^8$ B. ${}_{10}C_8 \left(\frac{1}{4}\right)^8 \left(\frac{3}{4}\right)^2$
 C. ${}_{10}C_8 \left(\frac{1}{10}\right)^2 \left(\frac{9}{10}\right)^8$ D. ${}_{10}C_8 \left(\frac{1}{10}\right)^8 \left(\frac{9}{10}\right)^2$

17. Which relation is a function?

A. $y = \cos x$ B. $x = 4$
 C. $x = y^2$ D. $x^2 + y^2 = 16$

18. What is the product of the roots of the quadratic equation $2x^2 - 7x = 5$?

- A. 5 B. $\frac{5}{2}$ C. -5 D. $-\frac{5}{2}$

19. In triangle ABC , if $m\angle A = 40$, $BC = 10$, and $AB = 12$, then $m\angle C$ can be

- A. an acute angle, only
 B. a right angle, only
 C. an obtuse angle, only
 D. either an acute or an obtuse angle

20. A savings account, S , has an initial value of \$50. The account grows at a 2% interest rate compounded n times per year, t , according to the function below.

$$S(t) = 50\left(1 + \frac{.02}{n}\right)^{nt}$$

Which statement about the account is correct?

- A. As the value of n increases, the amount of interest per year decreases.
 B. As the value of n increases, the value of the account approaches the function $S(t) = 50e^{0.02t}$.
 C. As the value of n decreases to one, the amount of interest per year increases.
 D. As the value of n decreases to one, the value of the account approaches the function $S(t) = 50(1 - 0.02)^t$.

21. The half-life of a radioactive substance is 15 years.

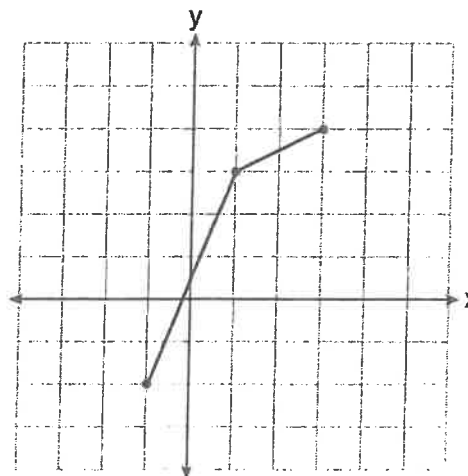
Write an equation that can be used to determine the amount, $s(t)$, of 200 grams of this substance that remains after t years.

Determine algebraically, to the *nearest year*, how long it will take for $\frac{1}{10}$ of this substance to remain.

22. If $a = -2$ and $b = -3$, what is the value of the expression $\frac{c^a}{c^b} - \frac{c^b}{c^a}$, when $c \neq 0$?

- A. 0 B. $\frac{c^2 + 1}{c}$
 C. $2c$ D. $\frac{c^2 - 1}{c}$

23. The function, f , is drawn on the accompanying set of axes. On the same set of axes, sketch the graph of f^{-1} , the inverse of f .



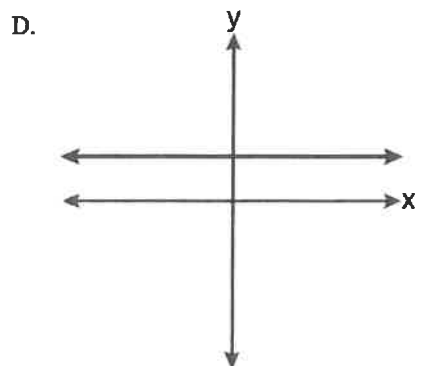
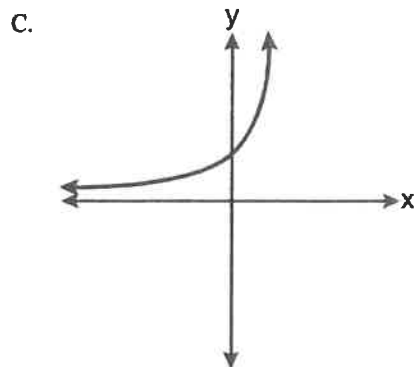
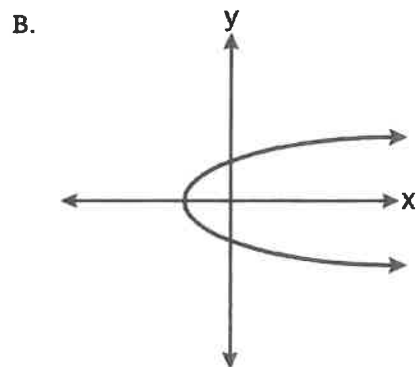
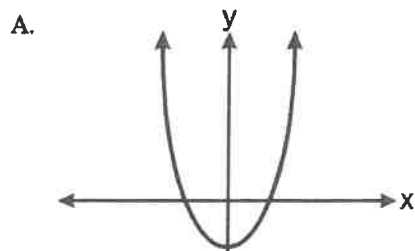
24. The product of i^7 and i^5 is equivalent to

- A. 1 B. -1 C. i D. $-i$

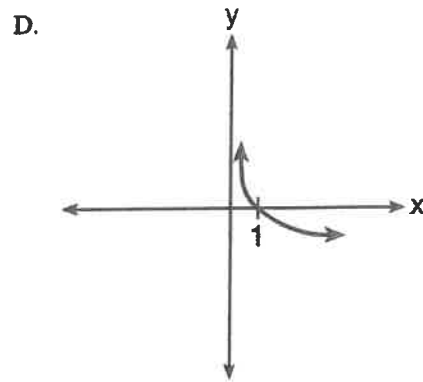
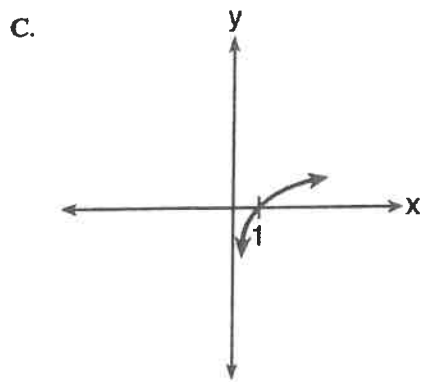
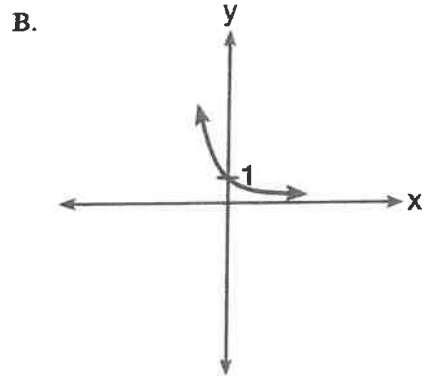
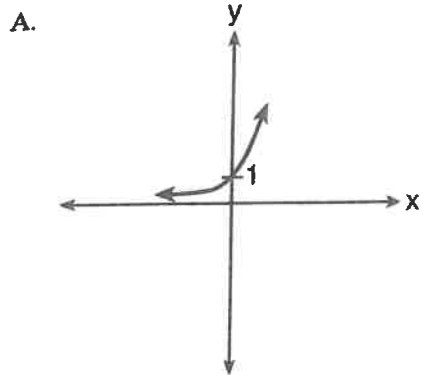
25. What is the product of $x^2 - 2x + 3$ and $x + 1$?

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

26. Which graph represents a one-to-one function?



27. Which sketch shows the inverse of $y = a^x$, where $a > 1$?



28. Factor $6x^3 + 33x^2 - 63x$ completely.

29. The solution set for the equation $b = \sqrt{2b^2 - 64}$ is

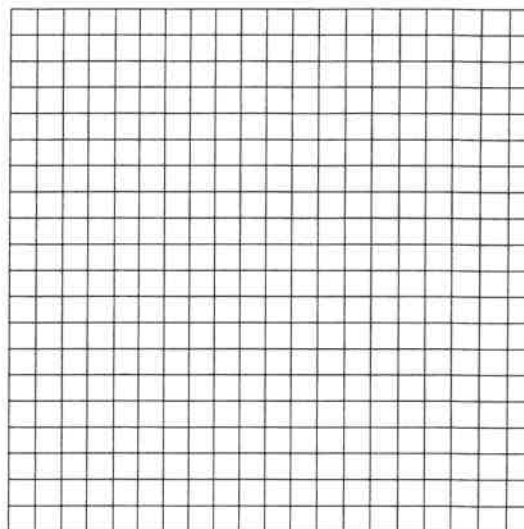
- A. $\{-8\}$ B. $\{8\}$ C. $\{\pm 8\}$ D. $\{\}$

30. Griffin is riding his bike down the street in Churchville, N.Y. at a constant speed, when a nail gets caught in one of his tires. The height of the nail above the ground, in inches, can be represented by the trigonometric function $f(t) = -13 \cos(0.8\pi t) + 13$, where t represents the time (in seconds) since the nail first became caught in the tire.

Determine the period of $f(t)$.

Interpret what the period represents in this context.

On the grid below, graph *at least one* cycle of $f(t)$ that includes the y-intercept of the function.



Does the height of the nail ever reach 30 inches above the ground? Justify your answer.

31. The table below shows the number of hours of daylight on the first day of each month in Rochester, NY.

Month	Hours of Daylight
Jan.	9.4
Feb.	10.6
March	11.9
April	13.9
May	14.7
June	15.4
July	15.1
Aug.	13.9
Sept.	12.5
Oct.	11.1
Nov.	9.7
Dec.	9.0

Given the data, what is the average rate of change in hours of daylight per month from January 1st to April 1st?

Interpret what this means in the context of the problem.

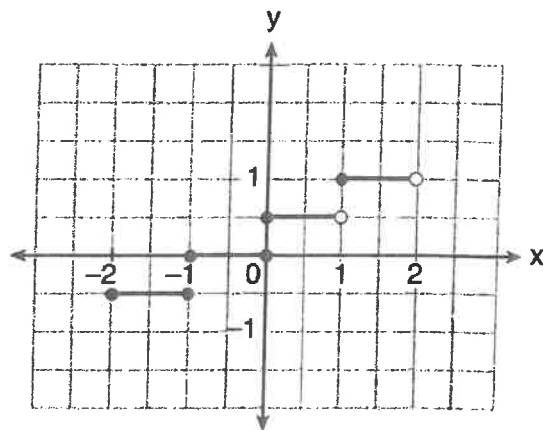
32. Algebraically solve for x :

$$\frac{7}{2x} - \frac{2}{x+1} = \frac{1}{4}$$

33. The expression $(x+i)^2 - (x-i)^2$ is equivalent to

- A. 0 B. -2
 C. $-2 + 4xi$ D. $4xi$

34. The graph of a relation is shown below.



What is the domain of this relation?

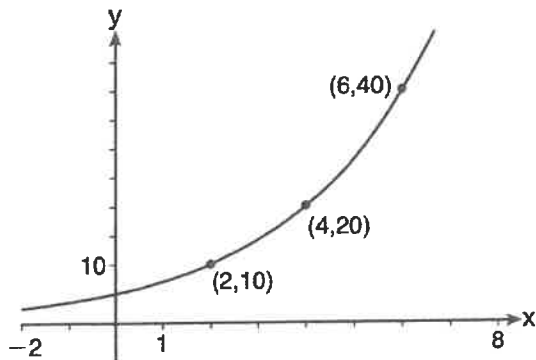
- A. $\{-2, -1, 0, 1\}$ B. $\{-\frac{1}{2}, 0, \frac{1}{2}, 1\}$
 C. $\{x | -2 \leq x < 2\}$ D. $\{x | -2 \leq x \leq 2\}$

35. If $f(x) = x^{-\frac{2}{3}}$, find $f(\frac{16}{9})$.

36. What does the correlation coefficient of -0.975 on a linear regression indicate?

- A. The slope is positive.
 B. One variable causes the other.
 C. The scatterplot shows no association of the variables.
 D. One variable has a strong relationship with the other.

37. The graph of $y = f(x)$ is shown below.



Which expression defines $f(x)$?

- A. $2x$ B. $5(2^x)$
 C. $5\left(2^{\frac{x}{2}}\right)$ D. $5(2^{2x})$
38. When $f(x) = \frac{x-7}{2}$, what is the value of $(f \circ f^{-1})(3)$?

- A. $2x+7$ B. -2 C. 3 D. x

39. The expression $\frac{3}{4}\sqrt{-80}$ is equivalent to

- A. $3i\sqrt{5}$ B. $2i\sqrt{15}$
 C. $-3\sqrt{5}$ D. $-2\sqrt{15}$

40. Which situation could be modeled using a geometric sequence?

- A. A cell phone company charges \$30.00 per month for 2 gigabytes of data and \$12.50 for each additional gigabyte of data.
 B. The temperature in your car is 79° . You lower the temperature of your air conditioning by 2° every 3 minutes in order to find a comfortable temperature.
 C. David's parents have set a limit of 50 minutes per week that he may play online games during the school year. However, they will increase his time by 5% per week for the next ten weeks.
 D. Sarah has \$100.00 in her piggy bank and saves an additional \$15.00 each week.

41. If $f(x) = x^0 + x^{\frac{1}{2}} + x^{-1}$, find $f(4)$.

42. What is the inverse of the function $y = 2x - 3$?

- A. $\frac{x+3}{2}$ B. $\frac{x}{2} + 3$
 C. $-2x + 3$ D. $\frac{1}{2x-3}$

43. A colony of bacteria grows exponentially. The table below shows the data collected daily.

Day (x)	Population (y)
0	200
1	425
2	570
3	800
4	1035
5	1650
6	2600

State the exponential regression equation for the data, rounding all values to the *nearest hundredth*.

44. Determine the value of n in simplest form:

$$i^{13} + i^{18} + i^{31} + n = 0$$

45. The expression $6 - (3x - 2i)^2$ is equivalent to

- A. $-9x^2 + 12xi + 10$
 B. $9x^2 - 12xi + 2$
 C. $-9x^2 + 10$
 D. $-9x^2 + 12xi - 4i + 6$

46. Write a recursive formula for the sequence 6, 9, 13.5, 20.25, ...

47. What is the inverse of the function $y = 4x + 5$?

- A. $x = \frac{1}{4}y - \frac{5}{4}$ B. $y = \frac{1}{4}x - \frac{5}{4}$
 C. $y = 4x - 5$ D. $y = \frac{1}{4x + 5}$

48. Consider the system of equations below:

$$\begin{aligned} x + y - z &= 6 \\ 2x - 3y + 2z &= -19 \\ -x + 4y - z &= 17 \end{aligned}$$

Which number is *not* the value of any variable in the solution of the system?

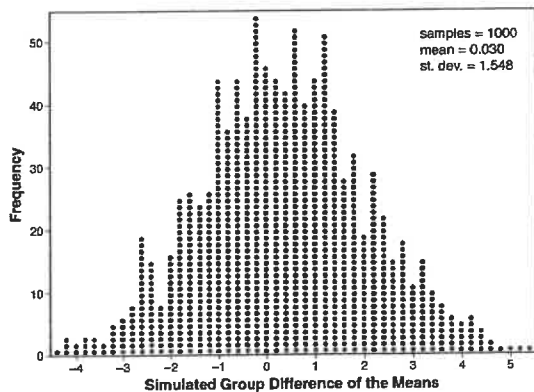
- A. -1 B. 2 C. 3 D. -4

49. Joseph was curious to determine if scent improves memory. A test was created where better memory is indicated by higher test scores. A controlled experiment was performed where one group was given the test on scented paper and the other group was given the test on unscented paper. The summary statistics from the experiment are given below.

	Scented Paper	Unscented Paper
\bar{x}	23	18
s_x	2.898	2.408

Calculate the difference in means in the experimental test grades (scented – unscented).

A simulation was conducted in which the subjects' scores were rerandomized into two groups 1000 times. The differences of the group means were calculated each time. The results are shown below.



Use the simulation results to determine the interval representing the middle 95% of the difference in means, to the nearest hundredth.

Is the difference in means in Joseph's experiment statistically significant based on the simulation? Explain.

50. Selected values for the functions f and g are shown in the tables below.

x	$f(x)$
-3.12	-4.88
0	-6
1.23	-4.77
8.52	2.53
9.01	3.01

x	$g(x)$
-2.01	-1.01
0	0.58
8.52	2.53
13.11	3.01
16.52	3.29

A solution to the equation $f(x) = g(x)$ is

- A. 0 B. 2.53 C. 3.01 D. 8.52
51. Camryn puts \$400 into a savings account that earns 6% annually. The amount in her account can be modeled by $C(t) = 400(1.06)^t$ where t is the time in years. Which expression best approximates the amount of money in her account using a weekly growth rate?
- A. $400(1.001153846)^t$
 B. $400(1.001121184)^t$
 C. $400(1.001153846)^{52t}$
 D. $400(1.001121184)^{52t}$
52. Given $\tan \theta = \frac{7}{24}$, and θ terminates in Quadrant III, determine the value of $\cos \theta$.

53. Kenzie believes that for $x \geq 0$, the expression $(\sqrt{x^2})(\sqrt[3]{x^3})$ is equivalent to $\sqrt[3]{x^6}$. Is she correct? Justify your response algebraically.

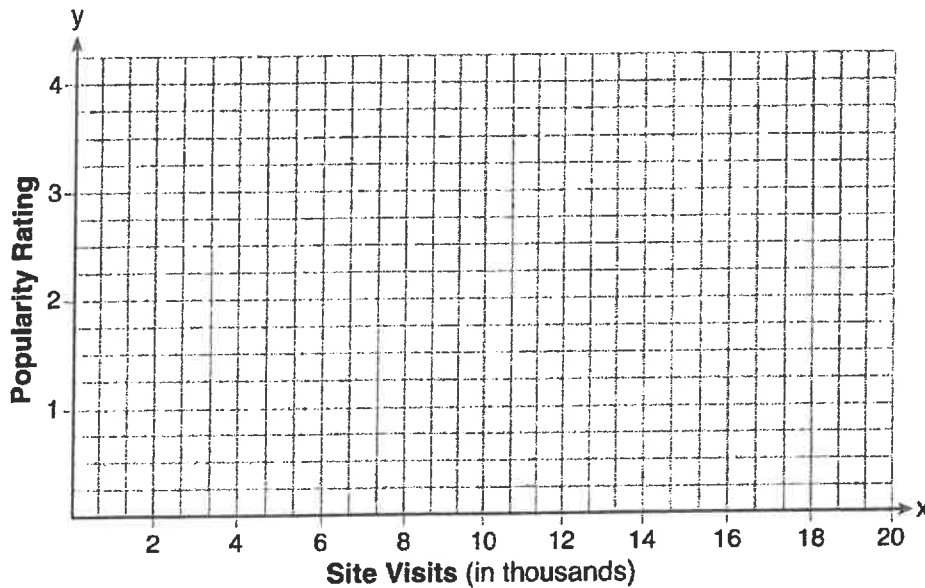
54. The expression $i^{100} + i^{101} + i^{102}$ equals

- A. 1 B. -1 C. -i D. i

55. Website popularity ratings are often determined using models that incorporate the number of visits per week a website receives. One model for ranking websites is $P(x) = \log(x - 4)$, where x is the number of visits per week in thousands and $P(x)$ is the website's popularity rating.

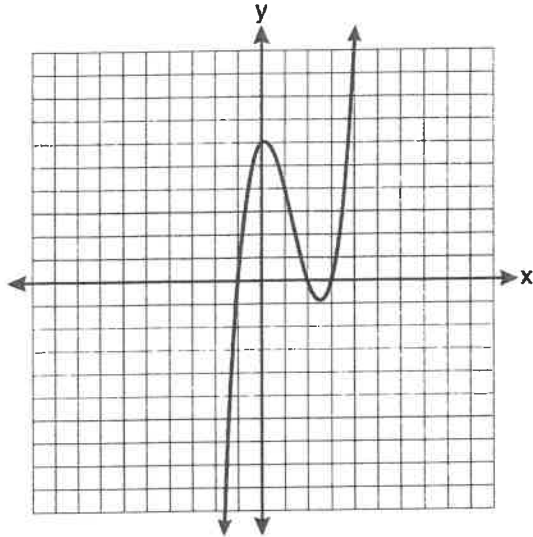
According to this model, if a website is visited 16,000 times in one week, what is its popularity rating, rounded to the nearest tenth?

Graph $y = P(x)$ on the axes below.



An alternative rating model is represented by $R(x) = \frac{1}{2}x - 6$, where x is the number of visits per week in thousands. Graph $R(x)$ on the same set of axes. For what number of weekly visits will the two models provide the same rating?

56. The graph of $y = x^3 - 4x^2 + x + 6$ is shown below.



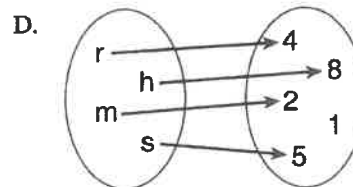
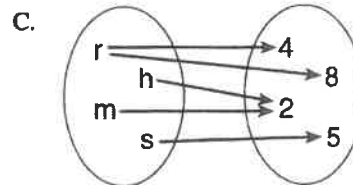
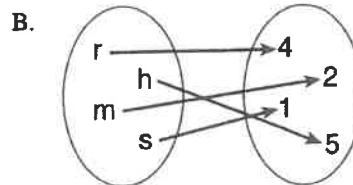
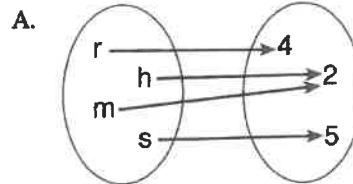
What is the product of the roots of the equation $x^3 - 4x^2 + x + 6 = 0$?

- A. -36 B. -6 C. 6 D. 4

57. A number, minus twenty times its reciprocal, equals eight. The number is

- A. 10 or -2 B. 10 or 2
C. -10 or -2 D. -10 or 2

58. Which relation is both one-to-one and onto?



59. Which statement(s) are true for all real numbers?

- I. $(x - y)^2 = x^2 + y^2$
II. $(x + y)^3 = x^3 + 3xy + y^3$

- A. I, only B. II, only
C. I and II D. neither I nor II

60. Given $P(x) = x^3 - 3x^2 - 2x + 4$, which statement is true?

- A. $(x - 1)$ is a factor because $P(-1) = 2$.
- B. $(x + 1)$ is a factor because $P(-1) = 2$.
- C. $(x + 1)$ is a factor because $P(1) = 0$.
- D. $(x - 1)$ is a factor because $P(1) = 0$.

61. If $f(x) = x^{-\frac{1}{3}}$, then $f(64)$ is equal to

- A. $\frac{1}{4}$
- B. -8
- C. -4
- D. 4

62. If $f(x) = (16x)^0 + x^{\frac{2}{3}}$, find $f(64)$.

63. Which equation has roots with the sum equal to $\frac{9}{4}$ and the product equal to $\frac{3}{4}$?

- A. $4x^2 + 9x + 3 = 0$
- B. $4x^2 + 9x - 3 = 0$
- C. $4x^2 - 9x + 3 = 0$
- D. $4x^2 - 9x - 3 = 0$

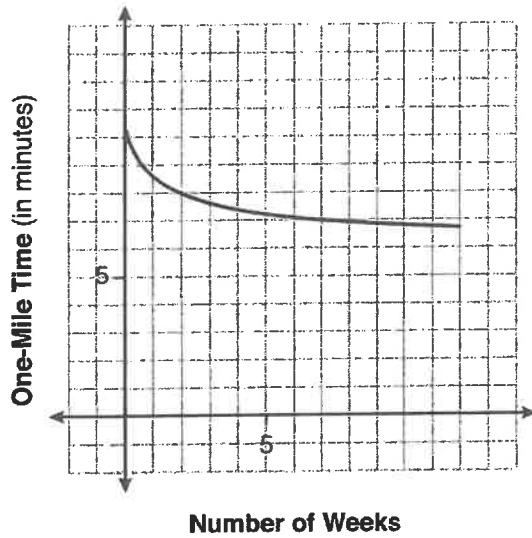
64. Factor completely over the set of integers:
 $16x^4 - 81$.

Sara graphed the polynomial $y = 16x^4 - 81$ and stated "All the roots of $y = 16x^4 - 81$ are real." Is Sara correct? Explain your reasoning.

65. The roots of the equation $2x^2 + 4 = 9x$ are

- A. real, rational, and equal
- B. real, rational, and unequal
- C. real, irrational, and unequal
- D. imaginary

66. Irma initially ran one mile in over ten minutes. She then began a training program to reduce her one-mile time. She recorded her one-mile time once a week for twelve consecutive weeks, as modeled in the graph below.



Which statement regarding Irma's one-mile training program is correct?

- A. Her one-mile speed increased as the number of weeks increased.
 B. Her one-mile speed decreased as the number of weeks increased.
 C. If the trend continues, she will run under a six-minute mile by week thirteen.
 D. She reduced her one-mile time the most between weeks ten and twelve.

67. What is the sample standard deviation of the data in the table below, rounded to the nearest tenth?

Scores	Frequency
50	1
60	2
70	7
80	6
90	3
100	2

- A. 12.5 B. 12.8 C. 17.1 D. 18.7

68. The expression i^{25} is equivalent to

- A. 1 B. -1 C. i D. $-i$

69. If $f(x) = x^{-\frac{2}{3}}$, what is $f(8)$?

- A. $-\frac{16}{3}$ B. -4 C. $\frac{1}{4}$ D. 4

70. For $x \geq 0$, which equation is false?

- A. $(x^{\frac{3}{2}})^2 = \sqrt[4]{x^3}$ B. $(x^3)^{\frac{1}{4}} = \sqrt[4]{x^3}$
 C. $(x^{\frac{3}{2}})^{\frac{1}{2}} = \sqrt[4]{x^3}$ D. $(x^{\frac{2}{3}})^2 = \sqrt[3]{x^4}$

71. Determine the sum and the product of the roots of $3x^2 = 11x - 6$.

72. Five thousand dollars is invested at an interest rate of 3.5% compounded quarterly. No money is deposited or withdrawn from the account. Using the formula below, determine, to the nearest cent, how much this investment will be worth in 18 years.

$$A = P \left(1 + \frac{r}{n}\right)^{nt}$$

A = amount

P = principal

r = interest rate

n = number of times the interest rate compounded annually

t = time in years

73. The expression $2i^2 + 3i^3$ is equivalent to

- A. $-2 - 3i$ B. $2 - 3i$
C. $-2 + 3i$ D. $2 + 3i$

74. What is the solution when the equation $wx^2 + w = 0$ is solved for x , where w is a positive integer?

- A. -1 B. 0 C. 6 D. $\pm i$

75. Which relation is *not* a function?

- A. $\{(x, y) : y = |x|\}$ B. $\{(x, y) : y = -x^2\}$
C. $\{(x, y) : y = x\}$ D. $\{(x, y) : y = \pm\sqrt{x}\}$

76. A sociologist reviews randomly selected surveillance videos from a public park over a period of several years and records the amount of time people spent on a smartphone. The statistical procedure the sociologist used is called

- A. a census
B. an experiment
C. an observational study
D. a sample survey

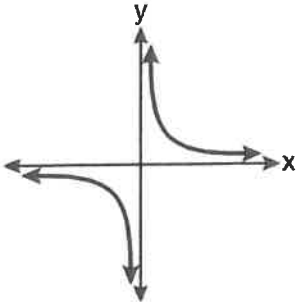
77. Solve $2 \cos^2 \theta = \cos \theta$ for all values of θ in the interval $0^\circ \leq \theta < 360^\circ$.

78. Which quadratic equation has roots whose sum is $-\frac{9}{4}$ and product is $\frac{2}{3}$?

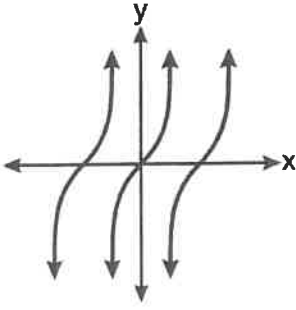
- A. $12x^2 + 8x + 27 = 0$ B. $12x^2 - 27x + 8 = 0$
C. $12x^2 - 8x - 27 = 0$ D. $12x^2 + 27x + 8 = 0$

79. Which graph represents a relation that is *not* a function?

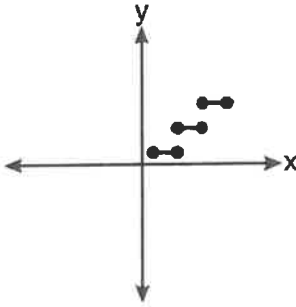
A.



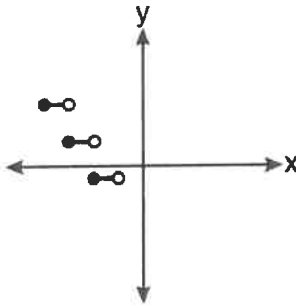
B.



C.



D.



80. The temperature, in degrees Fahrenheit, in Times Square during a day in August can be predicted by the function $T(x) = 8 \sin(0.3x - 3) + 74$, where x is the number of hours after midnight. According to this model, the predicted temperature, to the nearest *degree* Fahrenheit, at 7 pm is

- A. 68 B. 74 C. 77 D. 81

81. If $x = 3i$, $y = 2i$, and $z = m + i$, the expression xy^2z equals

- A. $-12 - 12mi$ B. $-6 - 6mi$
 C. $12 - 12mi$ D. $6 - 6mi$

82. The recursive formula to describe a sequence is shown below.

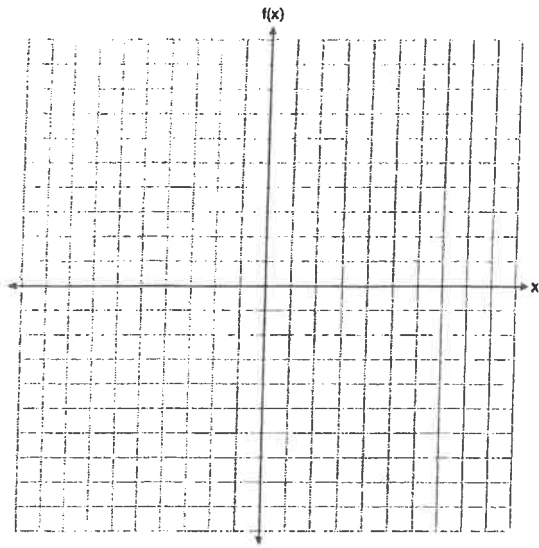
$$a_1 = 3$$

$$a_n = 1 + 2a_{n-1}$$

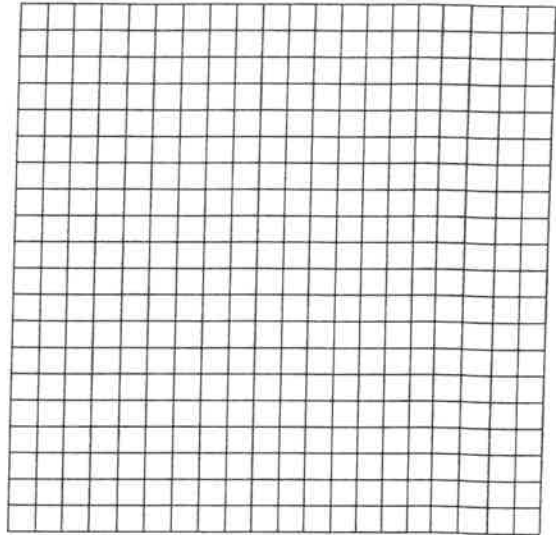
State the first four terms of this sequence.

Can this sequence be represented using an explicit geometric formula? Justify your answer.

83. Graph $f(x) = \log_2(x + 6)$ on the set of axes below.



86. Determine an equation for the parabola with focus $(4, -1)$ and directrix $y = -5$. (Use of the grid below is optional.)



84. What are the sum and product of the roots of the equation $6x^2 - 4x - 12 = 0$?

- A. sum = $-\frac{2}{3}$; product = -2
- B. sum = $\frac{2}{3}$; product = -2
- C. sum = -2 ; product = $\frac{2}{3}$
- D. sum = -2 ; product = $-\frac{2}{3}$

85. If $f(x) = x^2 - 6$, find $f^{-1}(x)$.

87. What is the fourth term in the expansion of $(2x - 1)^6$?

- A. $-160x^3$
- B. $-40x^3$
- C. $16x^4$
- D. $240x^4$

88. Which equation is *not* a function?

- A. $3x^2 + 4y^2 = 12$
- B. $y = 2 \cos x$
- C. $y = 2^x$
- D. $y = \log_2 x$

89. For which equation does the sum of the roots equal -3 and the product of the roots equal 2 ?
- A. $x^2 + 2x - 3 = 0$ B. $x^2 - 3x + 2 = 0$
 C. $2x^2 + 6x + 4 = 0$ D. $2x^2 - 6x + 4 = 0$
90. Express $4xi + 5yi^8 + 6xi^3 + 2yi^4$ in simplest $a + bi$ form.
91. Solve for p algebraically:
 $\log_{16}(p^2 - p + 4) - \log_{16}(2p + 11) = \frac{3}{4}$
92. There are 400 students in the senior class at Oak Creek High School. All of these students took the SAT. The distribution of their SAT scores is approximately normal. The number of students who scored within 2 standard deviations of the mean is approximately
- A. 75 B. 95 C. 300 D. 380

93. What is the solution set of the following system of equations?

$$y = 3x + 6$$

$$y = (x + 4)^2 - 10$$

- A. $\{(-5, -9)\}$ B. $\{(5, 21)\}$
 C. $\{(0, 6), (-5, -9)\}$ D. $\{(0, 6), (5, 21)\}$
94. If the roots of a quadratic equation are real, irrational, and unequal, the discriminant could have a value of
- A. 1 B. 0 C. 8 D. -6

95. The summation $2 \sum_{n=3}^6 \cos\left(\frac{\pi}{n-2}\right)$ equals
- A. $-\frac{2 + \sqrt{2}}{2}$ B. $-2 + \sqrt{2}$
 C. $-\frac{1 + \sqrt{2}}{2}$ D. $-1 + \sqrt{2}$

96. The discriminant of a quadratic equation is 24. The roots are
- A. imaginary
 - B. real, rational, and equal
 - C. real, rational, and unequal
 - D. real, irrational, and unequal

97. A 7-year lease for office space states that the annual rent is \$85,000 for the first year and will increase by 6% each additional year of the lease. What will the total rent expense be for the entire 7-year lease?

- A. \$42,809.63
- B. \$90,425.53
- C. \$595,000.00
- D. \$713,476.20

98. When the function $p(x)$ is divided by $x - 1$ the quotient is $x^2 + 7 + \frac{5}{x - 1}$. State $p(x)$ in standard form.

99. The Mathematics Club will select a president, a vice president, and a treasurer for the club. If there are 15 members in the club, how many different selections of a president, a vice president, and a treasurer are possible if each club member can be selected to only one position?

- A. 42
- B. 455
- C. 2730
- D. 3375

100. For which equation will $f(-2) = -6$?

- A. $f(x) = x^3 + x$
- B. $f(x) = x^4 - 5x$
- C. $f(x) = 4x^3 + 6x^2 - x$
- D. $f(x) = -3x^3 - 4x^2 + 4x$