

## Non-Calculator Part

1. If  $k$  is constant, what is the value of  $k$  such that the polynomial  $k^2x^3 - 6kx + 9$  is divisible by  $x - 1$ ?

$$k = \boxed{\phantom{00}} \boxed{\phantom{00}}$$

2. What is the solution of the equation  $\frac{2m^2+3m-5}{m^2+4m-5} = 4$ ?

Enter your answer in the space provided. Enter only your answer. You may not need to use all of the answer boxes.

$$m = \boxed{\phantom{00}} \boxed{\phantom{00}} \qquad m = \boxed{\phantom{00}} \boxed{\phantom{00}}$$

3. What extraneous solution arises when the equation  $\sqrt{x+3} = 2x$  is solved for  $x$  by first squaring both sides of the equation?

$$x = \boxed{\phantom{00}} \boxed{\phantom{00}}$$

4. Consider the equation  $\frac{4^{x^2}}{2^x} = 2$ .

## Part A

Which equation is equivalent to the equation shown? Select the correct answer.

A.  $2^{x^2} = 2$

B.  $2^{x^2-x} = 2$

C.  $2^{2x} = 2$

D.  $2^{2x^2-x} = 2$

## Part B

Which values are solutions to the equation? Select **all** that apply.

A.  $-2$

B.  $-1$

C.  $-\frac{1}{2}$

D.  $\frac{1}{2}$

E.  $1$

F.  $2$

Non-Calculator Part (continued)

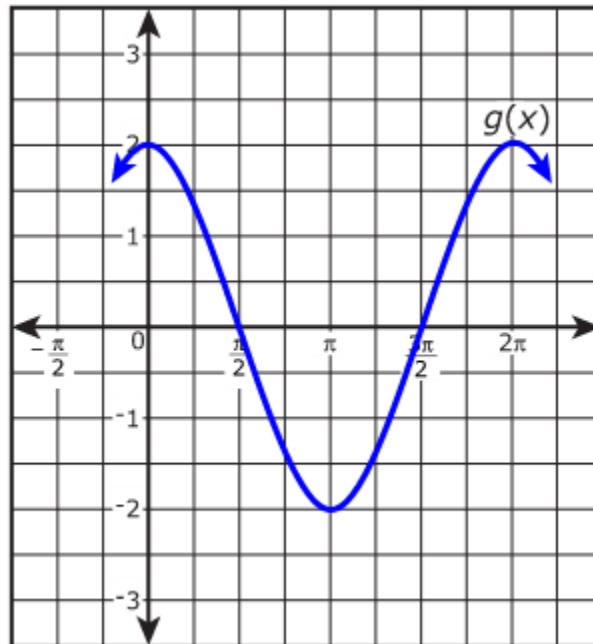
5. The table shows several complex numbers, where  $i$  is the imaginary unit. Select all appropriate cells in the table where the product of the two numbers is a real number.

	$8 - 2i$	$3$	$i$
$8 + 2i$	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
$5i$	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
$-4$	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. The function  $f(x) = \cos(x)$ .

Part A

Function  $g$  results from a transformation on function  $f$ . A portion of its graph is shown.



What is the equation of  $g(x)$ ? Write your answer in the form  $g(x) = a\cos(bx) + c$  using real numbers for  $a$ ,  $b$  and  $c$ .

Part B

Function  $h$  is a transformation of  $f$  such that  $h(x) = -f(x)$ . Select the phrase that completes each sentence.

Function $f$ is	Choose...	Function $h$ is	Choose...
	an even function		an even function
	an odd function		an odd function
	neither even nor odd		neither even nor odd

## Non-Calculator Part (continued)

7.

## Part A

An expression is given:  $x^2 - 8x + 21$

Determine the values of  $h$  and  $k$  that make the expression  $(x - h)^2 + k$  equivalent to the given expression.

Enter your answers in the space provided. Enter **only** your answer.

$$h = \boxed{\phantom{00}} \quad k = \boxed{\phantom{00}}$$

## Part B

An equation is given:  $x^2 - 8x + 21 = (x - 4)^2 + 3x - 16$

Find one value of  $x$  that is a solution to the given equation.

Use the Equation Editor. Enter **ONLY** your solution.

$$x = \boxed{\phantom{00}}$$

8. Given that  $x > 0$ , which expression is equivalent to  $5\sqrt{xy} + 25\sqrt{x}$  ?

A.  $5(xy)^{-1} + 25x^{-1}$

B.  $25x^{\frac{1}{2}}(\sqrt{y} + 5)$

C.  $\sqrt{x}(25y^{\frac{1}{2}} + 5)$

D.  $5x^{\frac{1}{2}}(y^{\frac{1}{2}} + 5)$

## Calculator Part

The Texas Instruments TI-84+ online graphing calculator will be available for the Infrastructure Trials, Field Tests and Operational Tests. However, it is not available at this time for the non-secure practice tests. Users wishing to access this calculator may navigate to the PARCC practice landing page (<http://practice.parcc.testnav.com>) and select the “Tutorials” tab for a link to a trial software version. Additionally, a handheld graphing calculator may be used to solve the math items in this section. Handheld calculator use is allowed during the PARCC test administration. Refer to PARCC’s calculator policy for information about calculator use on the PARCC assessment, (see Section 2.9 of the Test Coordinator Manual at <http://parcc.pearson.com/Manuals>).

1. What is the solution of the system of linear equations?

$$\begin{cases} x - 9y + 4z = 1 \\ -2x + 9y - 4z = -3 \\ 2x + y - 4z = -3 \end{cases}$$

Enter your answers in the boxes.

$$x = \boxed{\phantom{00}} \boxed{\phantom{00}} \quad y = \boxed{\phantom{00}} \boxed{\phantom{00}} \quad z = \boxed{\phantom{00}} \boxed{\phantom{00}}$$

2. The expression  $x^2(x - y)^3 - y^2(x - y)^3$  can be written in the form  $(x - y)^a(x + y)$ , where  $a$  is a constant. What is the value of  $a$ ?

Enter your answer in the box.

$$a = \boxed{\phantom{00000000}}$$

3. An investor deposited \$5,000 in an account that earns 1% annual interest. The amount of money in the account is represented by the function  $f(x) = 5,000(1.01)^x$ , where  $x$  represents the number of years since the account was opened.

What is the average rate of change of the function between  $x = 2$  and  $x = 7$ ?  
Select from the drop-down menus to correctly complete the sentence.

	Choose ...	Choose ...
	37.17	dollars
The average rate of change is	51.53	dollars per year
	52.04	years
	72.14	years per dollar

## Calculator Part (continued)

4. Paul started to train for a marathon. The table shows the number of miles Paul ran during each of the first three weeks after he began training.

Week	1	2	3
Distance (miles)	10	12	14.4

If this pattern continues, which of the listed statements could model the number of miles Paul runs  $a_n$ , in terms of the number of weeks,  $n$ , after he began training? Select **all** that apply.

- A.  $a_n = 10 + 2(n - 1)$       B.  $a_n = 10n^2$       C.  $a_n = 10(1.2)^{n-1}$   
D.  $a_1 = 10, a_n = 1.2a_{n-1}$       E.  $a_1 = 10, a_n = 2 + a_{n-1}$

5. If  $\sqrt[3]{(x+1)^5} = (x+1)^a$ , for  $x \geq -1$ , and  $a$  is a constant, what is the value of  $a$ ?

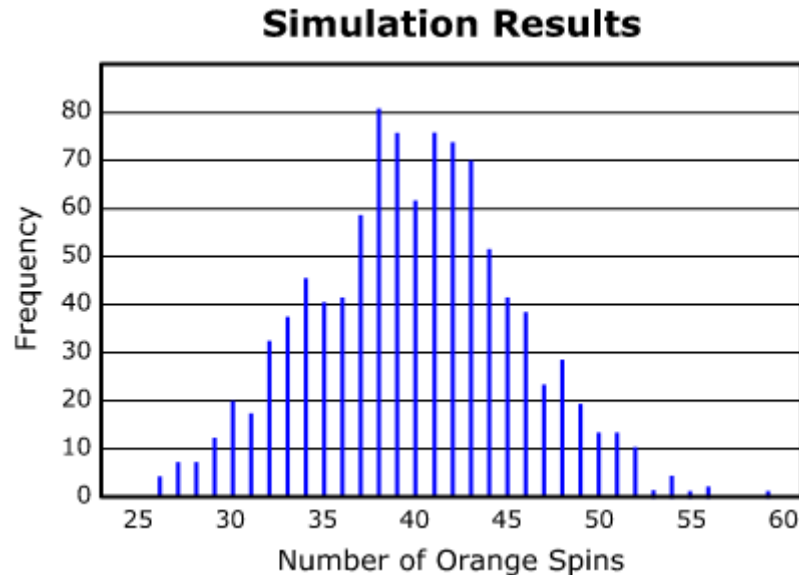
Enter your answer in the space provided. Enter **only** your fraction.

6. Angle  $\theta$  is in Quadrant II, and  $\sin \theta = \frac{4}{5}$ . What is the value of  $\cos \theta$ ?

Enter your answer in the space provided. Enter **only** your fraction.

## Calculator Part (continued)

7. Circular spinner is divided into five sectors of different colors. A student spun the arrow on the spinner 200 times and recorded that the arrow stopped on the orange sector 38 times out of the 200 spins. To test whether the spinner was fair, the student used a computer to simulate the number of times the arrow stops on orange in 200 spins of a fair spinner equally divided into five sectors of different colors. The results of 1,000 trials of the simulation are shown.



Based on the results of the simulation, is there statistical evidence that the spinner is not fair?

- A. Yes, because 38 was the most frequent outcome.
- B. Yes, because about 8% of the outcomes were 38.
- C. No, because the distribution is approximately normal.
- D. No, because an outcome of 38 or less is not unusual.
8. The functions  $f$  and  $g$  are defined by  $f(x) = x^2$  and  $g(x) = 2x$ , respectively.

Rewrite the function  $h(x) = \frac{f(2x)g(-2x)}{2}$  in terms of  $x$ .

Enter your answer in the space provided.  $h(x) = \boxed{\phantom{0000}}$

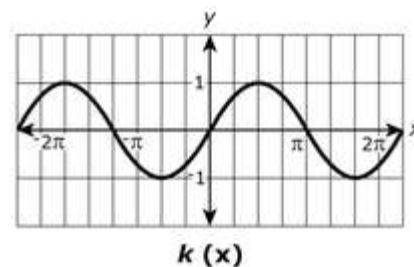
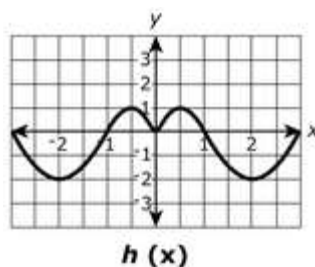
Calculator Part (continued)

9. Given the functions  $h(x) = |x - 4| + 1$  and  $k(x) = x^2 + 3$ , which intervals contain a value for  $x$  for which  $h(x) = k(x)$ ?

- A.  $-4.5 < x < -3$                       B.  $-3 < x < -1.5$   
 C.  $-1.5 < x < 1.5$                       D.  $1.5 < x < 3$   
 E.  $3 < x < 4.5$

10. For each function described by the equations and graphs shown, indicate whether the function is even, odd, or neither even nor odd by selecting the appropriate cell.

$f(x) = 3x^2$      $g(x) = -x^3 + 5$



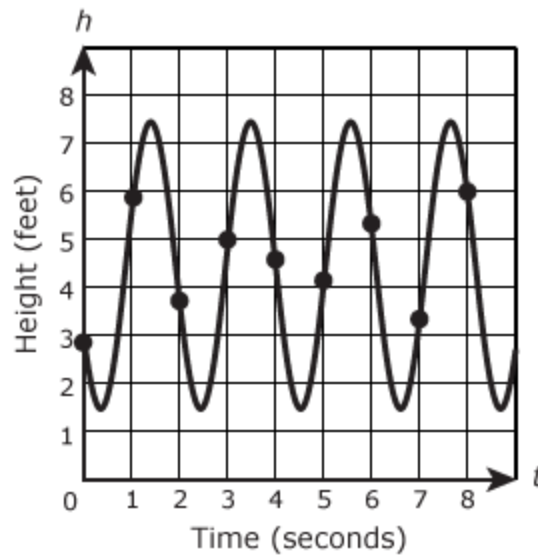
	$f(x)$	$g(x)$	$h(x)$	$k(x)$
Even	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Odd	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Neither Even nor Odd	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. For each system of equations shown in the table, determine the number of points of intersection. Select one cell for each row.

System	No points of intersection	One point of intersection	Two points of intersection
$\begin{cases} y = 1 - x^2 \\ y = x - 1 \end{cases}$	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
$\begin{cases} y = 1 - x^2 \\ y = 1 \end{cases}$	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
$\begin{cases} y = 1 - x^2 \\ y = 2 - x \end{cases}$	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Calculator Part (continued)

12. The graph models the height  $h$  above the ground, in feet, at time  $t$  seconds of a person swinging on a swing. Each point indicated on the graph represents the height of the person above the ground at the end of each one-second interval.



Over each interval, the average rate of change in the height, in feet per second, of the person on the swing can be calculated. Order the intervals from least to greatest, based on the corresponding rate of change.

Drag and drop each interval to the correct position.

From 2 seconds to 3 seconds

From 0 seconds to 1 second

From 7 seconds to 8 seconds

Least

Greatest



## Calculator Part (continued)

13. A scientist places 7.35 grams of a radioactive element in a dish. The half-life of the element is 2 days. After  $d$  days, the number of grams of the element remaining in the dish is given by the function  $R(d) = 7.35 \left(\frac{1}{2}\right)^{\frac{d}{2}}$ . Which statement is true about the equation when it is rewritten without a fractional exponent?

Select **all** that apply.

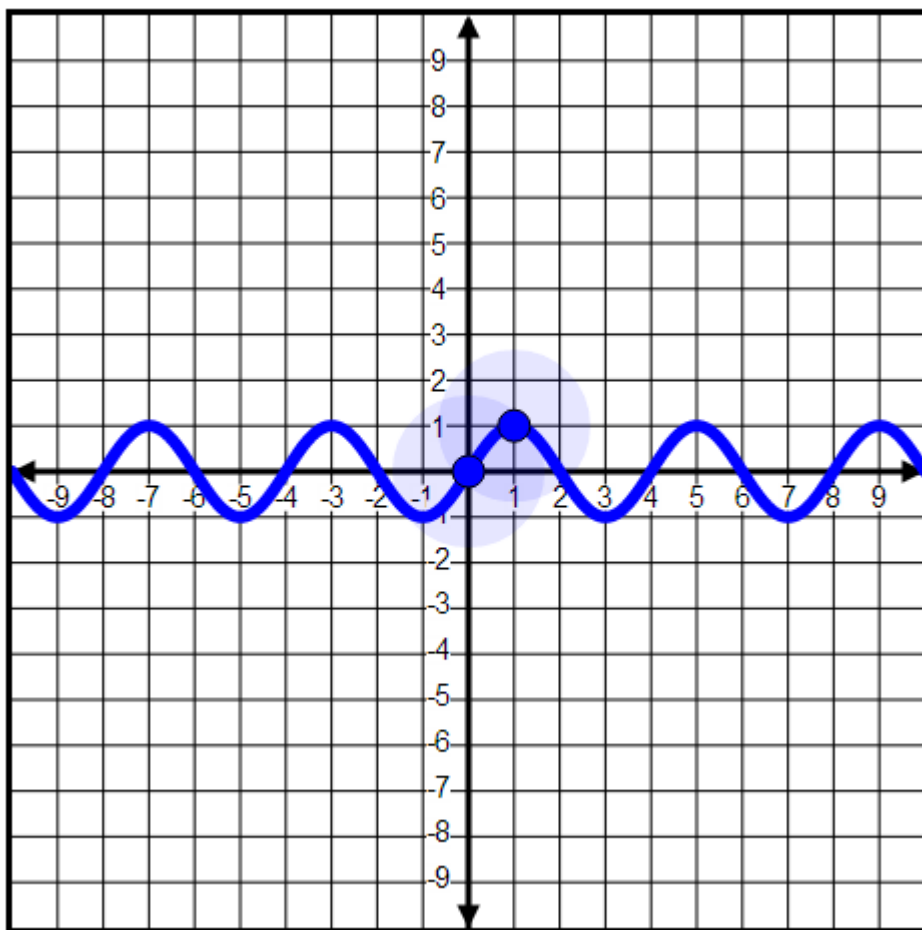
- A. An approximate equivalent equation is  $R(d) = 7.35(0.250)^d$ .
- B. An approximate equivalent equation is  $R(d) = 7.35(0.707)^d$ .
- C. The base of the exponent in this form of the equation can be interpreted to mean that the element decays by 0.250 grams per day.
- D. The base of the exponent in this form of the equation can be interpreted to mean that the element decays by 0.707 grams per day.
- E. The base of the exponent in this form of the equation can be interpreted to mean that about 25% of the element remains from one day to the next day.
- F. The base of the exponent in this form of the equation can be interpreted to mean that about 70.7% of the element remains from one day to the next day.

## Calculator Part (continued)

14. Using your knowledge of period, amplitude, and points on the midline, graph the function  $f(x) = \sin\left(\frac{\pi(x)}{2}\right) + 3$ .

First select the Sin/Cos button. Then drag the two points to graph the function. One point is on the midline and the other point is on either the minimum or maximum within the same period of the function.

Sin/Cos



Calculator Part (continued)

15. Write the expression  $x - xy^2$  as the product of the greatest common factor and a binomial. Then, determine the complete factorization of  $x - xy^2$ .

Enter your answers in the boxes.

Product of greatest common factor and binomial:

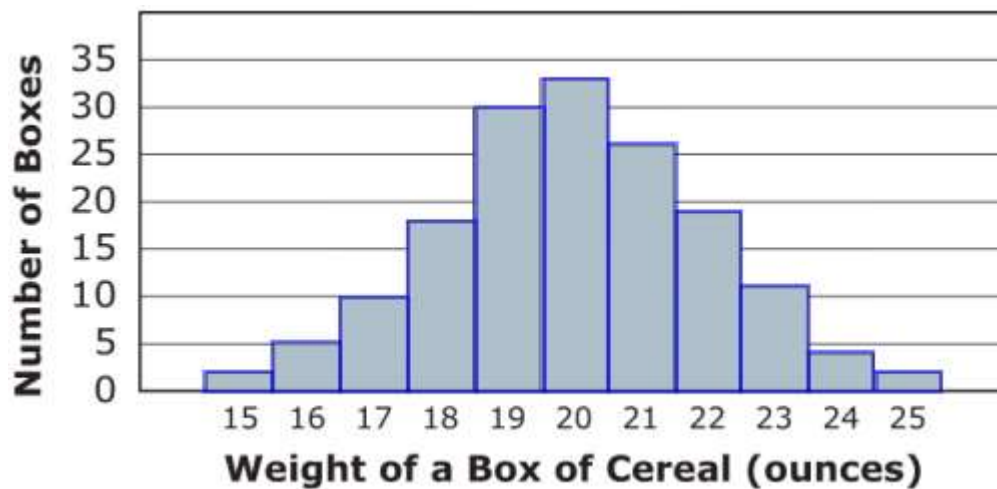
Complete factorization:

16. The distribution of weights (rounded to the nearest whole number) of all boxes of a certain cereal is approximately normal with mean 20 ounces and standard deviation 2 ounces.

Part A

A sample of boxes of the cereal was selected and the weights of the selected boxes are represented in the histogram. Click on all bars of the histogram that represent the rounded weights of boxes in the sample that are within 1.5 standard deviations of the mean weight of all boxes of the cereal.

Select **all** that apply.



(when clicked, the bars in the histogram turn deep blue)

Part B

Use the histogram to estimate the number of boxes in the sample with a weight that is more than 1.5 standard deviations above the mean.

- A. 2                      B. 6                      C. 17                      D. 36

Calculator Part (continued)

17. The population of country A was 40 million in the year 2000 and has grown continually in the years following. The population  $P$ , in millions, of the country  $t$  years after 2000 can be modeled by the function  $P(t) = 40e^{0.027t}$ , where  $t \geq 0$ .

Part A

Based on the model, what was the average rate of change, in millions of people per year, of the population of country A from 2000 to 2005? Give your answer to the nearest hundredth.

Part B

Based on the model, the solution to the equation  $50 = 40e^{0.027t}$  gives the number of years it will take for the population of country A to reach 50 million. What is the solution to the equation expressed as a logarithm?

- A.  $0.027 \ln(1.25)$
- B.  $\frac{\ln(1.25)}{0.027}$
- C.  $\ln\left(\frac{1.25}{0.027}\right)$
- D.  $\ln\left(\frac{0.027}{1.25}\right)$

Part C

Based on the model, in which years will the population of country A be greater than 55 million? Select **all** that apply.

- A. 2004
- B. 2007
- C. 2010
- D. 2013
- E. 2016
- F. 2019

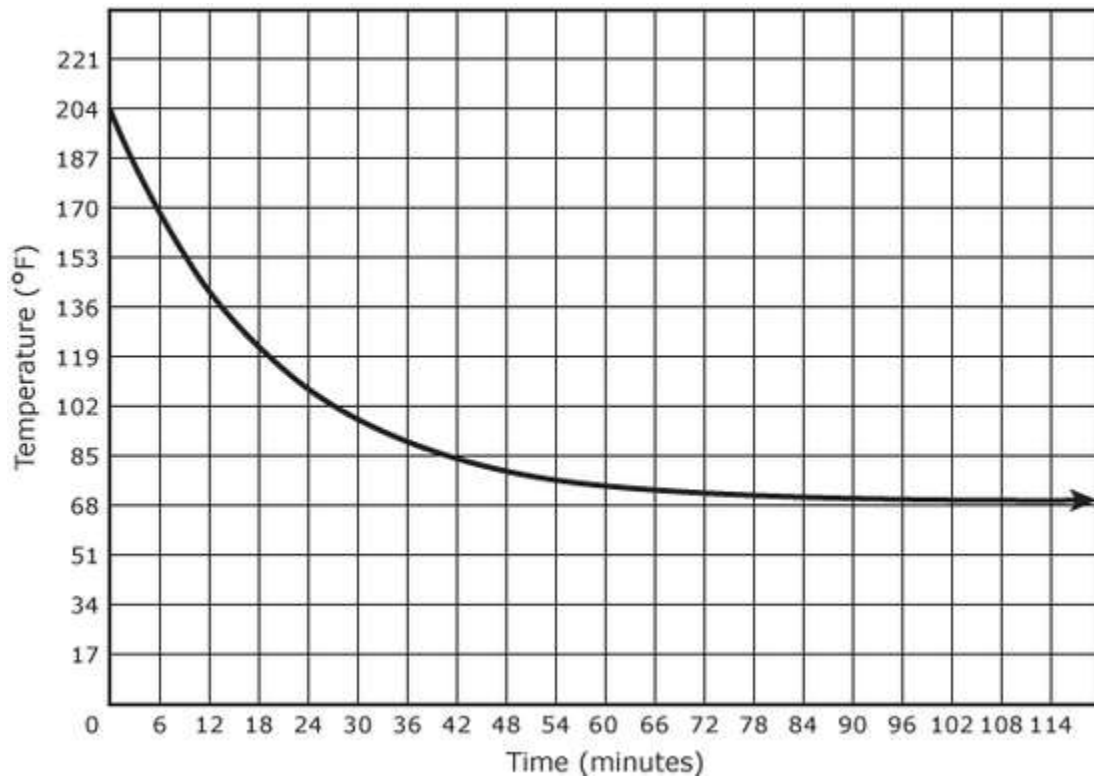
Part D

For another country, country B, the population  $M$ , in millions,  $t$  years after 2000 can be modeled by the function  $M(t) = 35e^{-0.042t}$ , where  $t \geq 0$ . Based on the models, what year will be the first year in which the population of country B will be greater than the population of country A?

- A. 2009
- B. 2012
- C. 2021
- D. The population of country B will not exceed the population of country A

## Calculator Part (continued)

18. The graph represents the temperature, in degrees Fahrenheit ( $F^{\circ}$ ), of tea for the first 120 minutes after it was poured into a cup.



## Part A

Based on the graph, what was the temperature of the tea when it was first poured into the cup?

- A.  $68^{\circ}$                       B.  $114^{\circ}$                       C.  $136^{\circ}$                       D.  $204^{\circ}$

## Part B

Based on the graph, as the number of minutes increased, what temperature did the tea approach?

- A.  $68^{\circ}$                       B.  $114^{\circ}$                       C.  $136^{\circ}$                       D.  $204^{\circ}$

Calculator Part (continued)

19. An investor deposits  $g$  dollars into an account at the beginning of each year for  $n$  years. The account earns an annual interest rate of  $r$ , expressed as a decimal. The amount of money  $S$ , in dollars, in the account can be determined by the formula  $S = \frac{g}{r}[(1 + r)^n - 1]$

Part A

Suppose the investor deposits \$500 a year for 10 years into an account that earns an annual interest rate of 5%. If no additional deposits or withdrawals are made, what will be the balance in the account at the end of 10 years?

- A. \$6,003.05      B. \$6,015.06      C. \$6,288.95      D. \$6,301.52

Part B

Enter a number in the answer box to complete the sentence. Give your answer to the nearest cent.

Suppose the investor wanted the balance in the account to be at least \$12,000 at the end of 10 years. At an annual interest rate of 5%, the amount of the yearly deposit should be at least \$     .

## Calculator Part (continued)

20. The two-way table shows the classification of student in a mathematics class by gender and dominant hand. A student who is ambidextrous use both hands equally well.

	Right-handed	Left-handed	Ambidextrous	Total
Male	11	4	1	16
Female	12	2	0	14
Total	23	6	1	30

## Part A

What is the probability that a randomly selected student in the class is female given that the student is right-handed?

Enter your answer in the space provided. Enter **only** your fraction.

## Part B

One student will be selected at random from this class. Consider the events:

$X$  the selected student is female

$Y$  the selected student is right-handed

Which statement about events  $X$  and  $Y$  is true?

- A. The events are independent because the number of right-handed students in the class is larger than the number of female students.
- B. The events are independent because the number of categories for dominant hand is different from the number of categories for gender.
- C. The events are not independent because for one of the dominant hand categories the number of female students is 0.
- D. The events are not independent because the probability of  $X$  is not equal to the probability of  $X$  given  $Y$ .

## Calculator Part (continued)

21. The London Eye, a Ferris wheel in England, has a diameter of 120 meters. The wheel completes a full rotation in 30 minutes at a speed which allows passengers to enter a capsule at the base of the Ferris wheel without stopping the wheel. At the highest point, a capsule reaches a height of 135 meters above the ground. The height above the ground, in meters, of a capsule  $x$  minutes after it starts at the base of the Ferris wheel can be modeled by

$$f(x) = A \cdot \cos\left(\frac{\pi}{15}x\right) + B, \text{ where } A \text{ and } B \text{ are constants.}$$

## Part A

What values of  $A$  and  $B$  define the model? Enter your answers in the boxes.

$$A = \begin{bmatrix} \square & \square \\ \square & \square \end{bmatrix} \text{ and } B = \begin{bmatrix} \square & \square \\ \square & \square \end{bmatrix}$$

## Part B

Consider a capsule that begins its rotation at the base of the London Eye. At which of the times listed will the capsule be 45 meters above the ground? Select **all** that apply.

- |               |               |               |
|---------------|---------------|---------------|
| A. 15 minutes | B. 25 minutes | C. 35 minutes |
| D. 45 minutes | E. 55 minutes | F. 65 minutes |

22. Consider the expression  $6x^3 - 5x^2y - 24xy^2 + 20y^3$ .

## Part A

Which expression is equivalent to  $6x^3 - 5x^2y - 24xy^2 + 20y^3$ ?

- |                                   |                                   |
|-----------------------------------|-----------------------------------|
| A. $x^2(6x - 5y) + 4y^2(6x + 5y)$ | B. $x^2(6x - 5y) + 4y^2(6x - 5y)$ |
| C. $x^2(6x - 5y) - 4y^2(6x + 5y)$ | D. $x^2(6x - 5y) - 4y^2(6x - 5y)$ |

## Part B

Which expressions are factors of  $6x^3 - 5x^2y - 24xy^2 + 20y^3$ ? Select **all** that apply.

- |                 |              |             |
|-----------------|--------------|-------------|
| A. $x^2 + 4y^2$ | B. $6x - 5y$ | C. $x + 2y$ |
| D. $6x + 5y$    | E. $x - 2y$  |             |



## Calculator Part (continued)

23. To investigate housing needs in the future, a town planning committee created a model to help predict the growth of the population of the town. The committee created a model based on data about the population of the town for five years. The data are shown in the table.

Year	Population (in thousands)
1985	5.35
1990	6.01
1995	6.91
2000	8.07
2005	9.45
2010	11.06

## Part A

Which model for  $P(t)$ , the population of the town  $t$  years after 1985, **best** fits the data?

- A.  $P(t) = 4.95 + 0.229t$                       B.  $P(t) = 5.35 + 0.228t$   
C.  $P(t) = 5.24(1.030)^t$                       D.  $P(t) = 5.35(1.029)^t$

## Part B

Consider the value predicted by the model for the year 2010. Which statement is true?

- A. The model overpredicts the actual population of the town by fewer than 1,000 people.  
B. The model overpredicts the actual population of the town by more than 1,000 people.  
C. The model underpredicts the actual population of the town by fewer than 1,000 people.  
D. The model underpredicts the actual population of the town by more than 1,000 people.

Calculator Part (continued)

24. Consider the function  $f(x) = (2x - 1)(x + 4)(x - 2)$ .

Part A

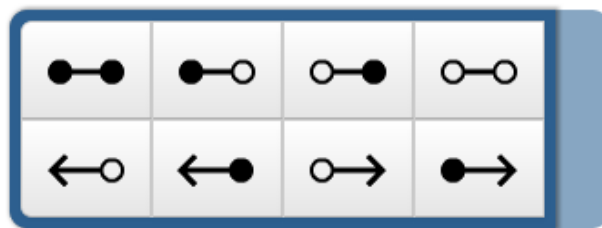
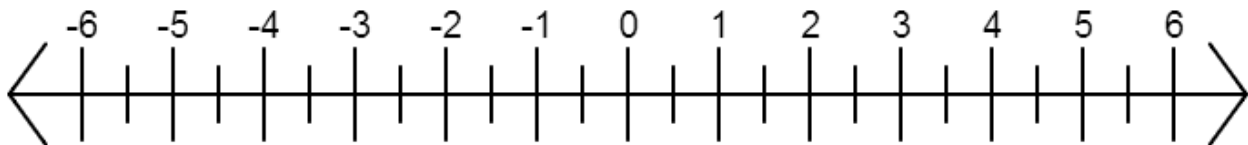
What is the  $y$ -intercept of the graph of the function in the coordinate plane?

Enter your answer in the box.

Part B

For what values of  $x$  is  $f(x) > 0$ ? Show your answer on the number line.

Select a solution set indicator. Drag the points on the indicator to the appropriate locations on the number line.



Part C

What is the end behavior of the graph of the function?

- A. As  $x \rightarrow -\infty$ ,  $f(x) \rightarrow \infty$ , and as  $x \rightarrow \infty$ ,  $f(x) \rightarrow \infty$ .
- B. As  $x \rightarrow -\infty$ ,  $f(x) \rightarrow \infty$ , and as  $x \rightarrow \infty$ ,  $f(x) \rightarrow -\infty$ .
- C. As  $x \rightarrow -\infty$ ,  $f(x) \rightarrow -\infty$ , and as  $x \rightarrow \infty$ ,  $f(x) \rightarrow \infty$ .
- D. As  $x \rightarrow -\infty$ ,  $f(x) \rightarrow -\infty$ , and as  $x \rightarrow \infty$ ,  $f(x) \rightarrow -\infty$ .

Part D

How many relative maximums does the function have?

- A. none
- B. one
- C. two
- D. three

Calculator Part (continued)

25. The manager of food services at a local high school is interested in assessing student opinion about a new lunch menu in the school cafeteria. The manager is planning to conduct a sample survey of the student population.

Part A.

Which of the listed methods of sample selection would be **most** efficient at reducing bias?

- A. Randomly select one day of the week, and then select the first 30 students who enter the cafeteria that day.
- B. Post the survey on the school Web site, and use the first 30 surveys that are submitted.
- C. Randomly select 30 students from a list of all the students in the school.
- D. Randomly select one classroom in the school, and then select the first 30 students who enter the classroom.

Part B

The manager wants to know if a student's gender is related to the student's opinion about the menu.

Select from the drop-down menus to correctly complete the sentence.

Because the survey is	Choose ... an experiment an observational study	the manager	Choose ... will be able to will not be able to
establish a cause-and-effect relationship between gender and opinion.			

## Calculator Part (continued)

26. When approximating the age of an artifact that is less than 40,000 years old, the radioisotope carbon-14 can be used. Carbon-14 is an element with the property that every 5,730 years the mass of the element in a sample is reduced by half.

The mass of carbon-14 in an artifact can be modeled by an exponential function,  $m$ , of its age  $x$ .

## Part A

Let  $A$  represent the original mass of carbon-14. Which function is the appropriate model?

- A.  $m(x) = A \cdot 2^{-5,730x}$                       B.  $m(x) = A \cdot 2^{\frac{-x}{5,730}}$
- C.  $m(x) = A \cdot 2^{\frac{-5,730x}{40,000}}$                       D.  $m(x) = A \cdot 2^{\frac{-40,000x}{5,730}}$

## Part B

Based on the situation, which interval represents the domain of the function  $m$ ?

- A.  $0 \leq x < \infty$                       B.  $-\infty < x < \infty$
- C.  $0 \leq x \leq 5,730$                       D.  $0 \leq x \leq 40,000$

## Part C

Which statements describe the graph of  $m$  in the coordinate plane? Select **all** that apply.

- A. The function  $m$  is a linear function.
- B. The function  $m$  is a nonlinear function.
- C. The function  $m$  is an increasing function.
- D. The function  $m$  is a decreasing function.
- E. The function  $m$  is a periodic function.

## Part D

At what age would the mass of the carbon-14 in an artifact be one-fourth the original amount?

- A. 1,432.5 years old                      B. 2,865 years old
- C. 11,460 years old                      D. 22,920 years old

M

A

T

H

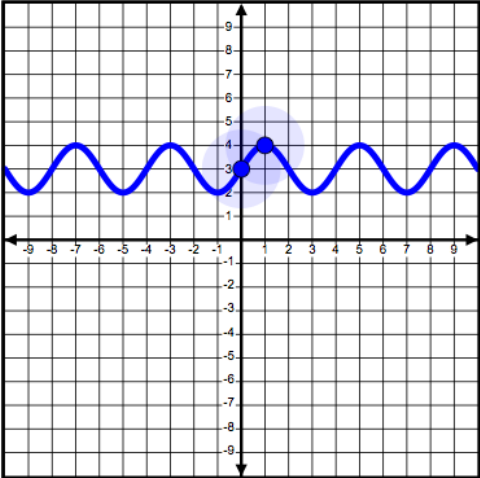
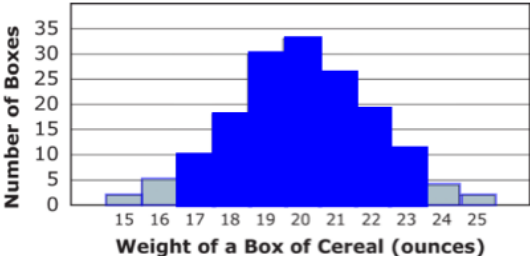
Item Number	Answer Key	Evidence Statement Keys																
Part 1: Non-Calculator																		
1	3	A-APR.2																
2	-7.5 or equivalent	A-Int.1																
3	-0.75 or equivalent	A-REI.2																
4	Part A: D Part B: C, E	A-Int.1																
5	<table><tr><td></td><td><math>8 - 2i</math></td><td>3</td><td><math>i</math></td></tr><tr><td><math>8 + 2i</math></td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr><tr><td><math>5i</math></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td></tr><tr><td>-4</td><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td></tr></table>		$8 - 2i$	3	$i$	$8 + 2i$	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	$5i$	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	N-CN.2
	$8 - 2i$	3	$i$															
$8 + 2i$	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>															
$5i$	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>															
-4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>															
6	Part A: $g(x)=2\cos(x)$ or equivalent Part B:  Function $f$ is <span>an even function</span> . Function $h$ is <span>an even function</span> .	F-BF.3-5																
7	Part A: $h = 4, k = 5$ Part B: 7	A-Int.1																
8	D	N-RN.2																
Part 2: Calculator																		
1	$x=$ <input type="text" value="2"/> , $y=$ <input type="text" value="1"/> , $z=$ <input type="text" value="2"/>	A-REI.6-2																
2	4	A-SSE.2-3																
3	The average rate of change is <input type="text" value="52.04"/> <span>dollars per year</span> .	F-IF.6-2																
4	C, D	F-BF.2																
5	$\frac{5}{6}$	N-RN.2																
6	$-\frac{3}{5}$ or equivalent	F-TF.8-2																
7	D	S-IC.2																
8	$-8x^3$	F-BF.1b-1																
9	B, C	A-REI.11-2																

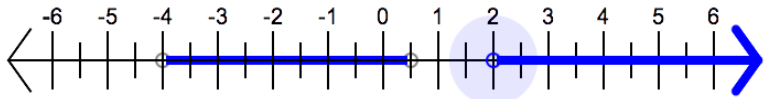
M

A

T

H

10	<table><tr><td></td><td><math>f(x)</math></td><td><math>g(x)</math></td><td><math>h(x)</math></td><td><math>k(x)</math></td></tr><tr><td>Even</td><td><input checked="" type="radio"/></td><td><input type="radio"/></td><td><input checked="" type="radio"/></td><td><input type="radio"/></td></tr><tr><td>Odd</td><td><input type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td><td><input checked="" type="radio"/></td></tr><tr><td>Neither Even nor Odd</td><td><input type="radio"/></td><td><input checked="" type="radio"/></td><td><input type="radio"/></td><td><input type="radio"/></td></tr></table>		$f(x)$	$g(x)$	$h(x)$	$k(x)$	Even	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Odd	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Neither Even nor Odd	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	F-BF.3-3
	$f(x)$	$g(x)$	$h(x)$	$k(x)$																		
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11	<table><tr><td>System</td><td>No points of intersection</td><td>One point of intersection</td><td>Two points of intersection</td></tr><tr><td><math>\begin{cases} y = 1 - x^2 \\ y = x - 1 \end{cases}</math></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td></tr><tr><td><math>\begin{cases} y = 1 - x^2 \\ y = 1 \end{cases}</math></td><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td></tr><tr><td><math>\begin{cases} y = 1 - x^2 \\ y = 2 - x \end{cases}</math></td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr></table>	System	No points of intersection	One point of intersection	Two points of intersection	$\begin{cases} y = 1 - x^2 \\ y = x - 1 \end{cases}$	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	$\begin{cases} y = 1 - x^2 \\ y = 1 \end{cases}$	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	$\begin{cases} y = 1 - x^2 \\ y = 2 - x \end{cases}$	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A-REI.7				
System	No points of intersection	One point of intersection	Two points of intersection																			
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12	<div><div>From 2 seconds to 3 seconds</div><div>From 7 seconds to 8 seconds</div><div>From 0 seconds to 1 second</div></div> <div>Least<span style="float:right">Greatest</span></div>	F-IF.6-7																				
13	B, F	A-SSE.3c-2																				
14		F-IF.7e-2																				
15	Product of greatest common factor and binomial : $x(1 - y^2)$ Complete factorization : $x(1 - y)(1 + y)$ <div>or equivalent</div>	A-SSE.2-6																				
16	Part A:  Part B: 6	S-ID.4																				

17	Part A: 1.16 Part B: B Part C: D, E, F Part D: D	HS-Int.3-3
18	Part A: D Part B: A	F-IF.4-2
19	Part A: C Part B: Suppose the investor wanted the balance in the account to be at least \$12,000 at the end of 10 years. At an annual interest rate of 5%, the amount of the yearly deposit should be at least \$ <input type="text" value="954.06"/> .	A-SSE.4-2
20	Part A: $\frac{12}{23}$ Part B: D	S-CP.Int.1
21	Part A: $A = -60, B = 75$ Part B: B, C, E, F	F-Int.1-2
22	Part A: D Part B: B, C, E	A-SSE.2-6
23	Part A: C Part B: C	S-ID.6a-1
24	Part A: 8 Part B:  Part C: C Part D: B	F-IF.4-2
25	Part A: C Part B: Because the survey is <input type="text" value="an observational study"/> , the manager <input type="text" value="will not be able to"/> establish a cause-and-effect relationship between gender and opinion.	S-IC.3-1
26	Part A: B Part B: D Part C: B, D Part D: C	F-Int.1-2