Tucson International Academy

Academia Internacional de Tucson

Homework Packet for Twelveth Grade

Week 9

Name_____

Week Starts on/ Due on _____

Each week you are to complete your homework packet and turn it on the day the teacher assigns. Part of the homework is reading 45 minutes a day. This can be done in after school care and they can read to a younger sibling or an adult as well. Weekend reading is encouraged, each week students can get credit for reading on Saturday and/or Sunday. Reading each day is very important to help each student get better at this skill.

© ***Reading is Fun!!*** ©

Weekly Home Reading Record

Day	Reading Material	Amount of Time	How many pages
Weekend			
Monday			
Tuesday			
Wednesday			
Thursday			

Total Time Reading: Hours_____ Minutes_____

Student Signature_____ Date_____

Parent Signature_____ Date_____

Questions 43-52 are based on the following passage and supplementary material.

This passage is adapted from Geoffrey Giller, "Long a Mystery, How 500-Meter-High Undersea Waves Form Is Revealed." ©2014 by Scientific American.

Some of the largest ocean waves in the world are nearly impossible to see. Unlike other large waves, these rollers, called internal waves, do not ride the ocean surface. Instead, they move underwater, undetectable without the use of satellite imagery or sophisticated monitoring equipment. Despite their hidden nature, internal waves are fundamental parts of ocean water dynamics, transferring heat to the ocean depths and bringing up cold water from below. And they can reach staggering heights—some as tall as skyscrapers.

Because these waves are involved in ocean mixing and thus the transfer of heat, understanding them is crucial to global climate modeling, says Tom Peacock, a researcher at the Massachusetts Institute of Technology. Most models fail to take internal waves into account. "If we want to have more and more accurate climate models, we have to be able to capture processes such as this," Peacock says.

Peacock and his colleagues tried to do just that. Their study, published in November in *Geophysical Research Letters*, focused on internal waves generated in the Luzon Strait, which separates Taiwan and the Philippines. Internal waves in this region, thought to be some of the largest in the world, can reach about 500 meters high. "That's the same height as the Freedom Tower that's just been built in New York," Peacock says.

Although scientists knew of this phenomenon in the South China Sea and beyond, they didn't know exactly how internal waves formed. To find out, Peacock and a team of researchers from M.I.T. and Woods Hole Oceanographic Institution worked with France's National Center for Scientific Research using a giant facility there called the Coriolis Platform. The rotating platform, about 15 meters (49.2 feet) in diameter, turns at variable speeds and can simulate Earth's rotation. It also has walls, which means scientists can fill it with water and create accurate, large-scale simulations of various oceanographic scenarios.

Peacock and his team built a carbon-fiber resin scale model of the Luzon Strait, including the islands and surrounding ocean floor topography. Then they filled the platform with water of varying salinity to replicate the different densities found at the strait, with denser, saltier water below and lighter, less briny water above. Small particles were added to the solution and illuminated with lights from below in order to track how the liquid moved. Finally, they re-created tides using two large plungers to see how the internal waves themselves formed.

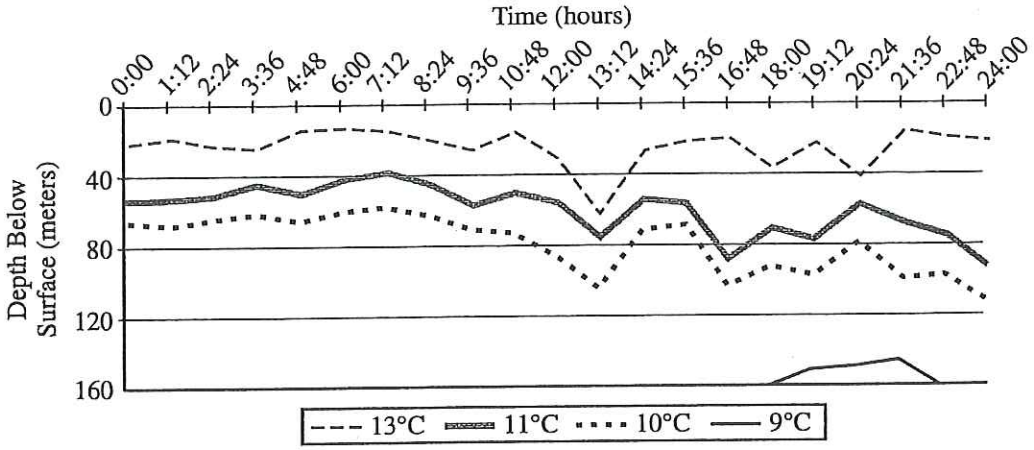
The Luzon Strait's underwater topography, with a distinct double-ridge shape, turns out to be responsible for generating the underwater waves. As the tide rises and falls and water moves through the strait, colder, denser water is pushed up over the ridges into warmer, less dense layers above it. This action results in bumps of colder water trailed by warmer water that generate an internal wave. As these waves move toward land, they become steeper—much the same way waves at the beach become taller before they hit the shore—until they break on a continental shelf.

The researchers were also able to devise a mathematical model that describes the movement and formation of these waves. Whereas the model is specific to the Luzon Strait, it can still help researchers understand how internal waves are generated in other places around the world. Eventually, this information will be incorporated into global climate models, making them more accurate. "It's very clear, within the context of these [global climate] models, that internal waves play a role in driving ocean circulations," Peacock says.

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CONTINUE

CHANGES IN DEPTH OF ISOTHERMS*
IN AN INTERNAL WAVE OVER A 24-HOUR PERIOD



* Bands of water of constant temperatures

Adapted from Justin Small et al., "Internal Solitons in the Ocean: Prediction from SAR." ©1998 by Oceanography, Defence Evaluation and Research Agency.

43

The first paragraph serves mainly to

A) explain how a scientific device is used.

B) note a common misconception about an event.

C) describe a natural phenomenon and address its importance.

D) present a recent study and summarize its findings.

44

As used in line 19, "capture" is closest in meaning to

A) control.

B) record.

C) secure.

D) absorb.

45

According to Peacock, the ability to monitor internal waves is significant primarily because

A) it will allow scientists to verify the maximum height of such waves.

B) it will allow researchers to shift their focus to improving the quality of satellite images.

C) the study of wave patterns will enable regions to predict and prevent coastal damage.

D) the study of such waves will inform the development of key scientific models.

46

Which choice provides the best evidence for the answer to the previous question?

A) Lines 1-2 ("Some . . . see")

B) Lines 4-6 ("they . . . equipment")

C) Lines 17-19 ("If . . . this")

D) Lines 24-26 ("Internal . . . high")

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CONTINUE

47

As used in line 65, "devise" most nearly means

A) create.

B) solve.

C) imagine.

D) begin.

48

Based on information in the passage, it can reasonably be inferred that all internal waves

A) reach approximately the same height even though the locations and depths of continental shelves vary.

B) may be caused by similar factors but are influenced by the distinct topographies of different regions.

C) can be traced to inconsistencies in the tidal patterns of deep ocean water located near islands.

D) are generated by the movement of dense water over a relatively flat section of the ocean floor.

49

Which choice provides the best evidence for the answer to the previous question?

A) Lines 29-31 ("Although . . . formed")

B) Lines 56-58 ("As the . . . it")

C) Lines 61-64 ("As these . . . shelf")

D) Lines 67-70 ("Whereas . . . world")

50

In the graph, which isotherm displays an increase in depth below the surface during the period 19:12 to 20:24?

A) 9°C

B) 10°C

C) 11°C

D) 13°C

51

Which concept is supported by the passage and by the information in the graph?

A) Internal waves cause water of varying salinity to mix.

B) Internal waves push denser water above layers of less dense water.

C) Internal waves push bands of cold water above bands of warmer water.

D) Internal waves do not rise to break the ocean's surface.

52

How does the graph support the author's point that internal waves affect ocean water dynamics?

A) It demonstrates that wave movement forces warmer water down to depths that typically are colder.

B) It reveals the degree to which an internal wave affects the density of deep layers of cold water.

C) It illustrates the change in surface temperature that takes place during an isolated series of deep waves.

D) It shows that multiple waves rising near the surface of the ocean disrupt the flow of normal tides.

STOP

If you finish before time is called, you may check your work on this section only. Do not turn to any other section.

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Writing and Language Test

35 MINUTES, 44 QUESTIONS

Turn to Section 2 of your answer sheet to answer the questions in this section.

DIRECTIONS

Each passage below is accompanied by a number of questions. For some questions, you will consider how the passage might be revised to improve the expression of ideas. For other questions, you will consider how the passage might be edited to correct errors in sentence structure, usage, or punctuation. A passage or a question may be accompanied by one or more graphics (such as a table or graph) that you will consider as you make revising and editing decisions.

Some questions will direct you to an underlined portion of a passage. Other questions will direct you to a location in a passage or ask you to think about the passage as a whole.

After reading each passage, choose the answer to each question that most effectively improves the quality of writing in the passage or that makes the passage conform to the conventions of standard written English. Many questions include a "NO CHANGE" option. Choose that option if you think the best choice is to leave the relevant portion of the passage as it is.

Questions 1-11 are based on the following passage.

Librarians Help Navigate in the Digital Age

In recent years, public libraries in the United States have experienced 1 reducing in their operating funds due to cuts imposed at the federal, state, and local government levels. 2 However, library staffing has been cut by almost four percent since 2008, and the demand for librarians continues to decrease, even though half of public libraries report that they have an insufficient number of staff to meet their patrons' needs. Employment in all job sectors in the United States is projected to grow by fourteen percent over the next

1

A) NO CHANGE
B) reductions
C) deducting
D) deducts

2

A) NO CHANGE
B) Consequently,
C) Nevertheless,
D) Previously,

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CONTINUE

decade, yet the expected growth rate for librarians is predicted to be only seven percent, or half of the overall rate. This trend, combined with the increasing accessibility of information via the Internet, 3 has led some to claim that librarianship is in decline as a profession. As public libraries adapt to rapid technological advances in information distribution, librarians' roles are actually expanding.

The share of library materials that is in nonprint formats 4 is increasing steadily; in 2010, at least 18.5 million e-books were available 5 for them to circulate. As a result, librarians must now be proficient curators of electronic information, compiling, 6 catalog, and updating these collections. But perhaps even more importantly, librarians function as first responders for their communities' computer needs. Since

3

A) NO CHANGE
B) have
C) which have
D) which has

4

At this point, the writer is considering adding the following information.

—e-books, audio and video materials, and online journals—

Should the writer make this addition here?

A) Yes, because it provides specific examples of the materials discussed in the sentence.
B) Yes, because it illustrates the reason for the increase mentioned later in the sentence.
C) No, because it interrupts the flow of the sentence by supplying irrelevant information.
D) No, because it weakens the focus of the passage by discussing a subject other than librarians.

5

A) NO CHANGE
B) to be circulated by them.
C) for their circulating.
D) for circulation.

6

A) NO CHANGE
B) librarians cataloging,
C) to catalog,
D) cataloging,

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CONTINUE

one of the fastest growing library services is public access computer use, there is great demand for computer instruction. 7 In fact, librarians' training now includes courses on research and Internet search methods. Many of whom teach classes in Internet navigation, database and software use, and digital information literacy. While these classes are particularly helpful to young students developing basic research skills, 8 but adult patrons can also benefit from librarian assistance in that they can acquire job-relevant computer skills. 9 Free to all who utilize their services, public libraries and librarians are especially valuable, because they offer free resources that may be difficult to find elsewhere, such as help with online job

7

Which choice most effectively combines the underlined sentences?

A) In fact, librarians' training now includes courses on research and Internet search methods; many librarians teach classes in Internet navigation, database and software use, and digital information literacy is taught by them.

B) In fact, many librarians, whose training now includes courses on research and Internet search methods, teach classes in Internet navigation, database and software use, and digital information literacy.

C) Training now includes courses on research and Internet search methods; many librarians, in fact, are teaching classes in Internet navigation, database and software use, and digital information literacy.

D) Including courses on research and Internet search methods in their training is, in fact, why many librarians teach classes in Internet navigation, database and software use, and digital information literacy.

8

A) NO CHANGE

B) and

C) for

D) DELETE the underlined portion.

9

Which choice most effectively sets up the examples given at the end of the sentence?

A) NO CHANGE

B) During periods of economic recession,

C) Although their value cannot be measured,

D) When it comes to the free services libraries provide,

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CONTINUE

searches as well as résumé and job material development. An overwhelming number of public libraries also report that they provide help with electronic government resources related to income taxes, **10** law troubles, and retirement programs.

In sum, the Internet does not replace the need for librarians, and librarians are hardly obsolete. **11** Like books, librarians have been around for a long time, but the Internet is extremely useful for many types of research.

10

A) NO CHANGE
B) legal issues,
C) concerns related to law courts,
D) matters for the law courts,

11

Which choice most clearly ends the passage with a restatement of the writer's primary claim?

A) NO CHANGE
B) Although their roles have diminished significantly, librarians will continue to be employed by public libraries for the foreseeable future.
C) The growth of electronic information has led to a diversification of librarians' skills and services, positioning them as savvy resource specialists for patrons.
D) However, given their extensive training and skills, librarians who have been displaced by budget cuts have many other possible avenues of employment.

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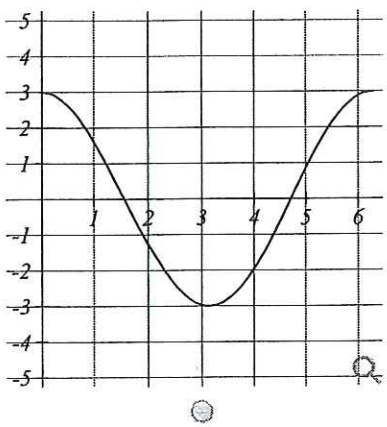
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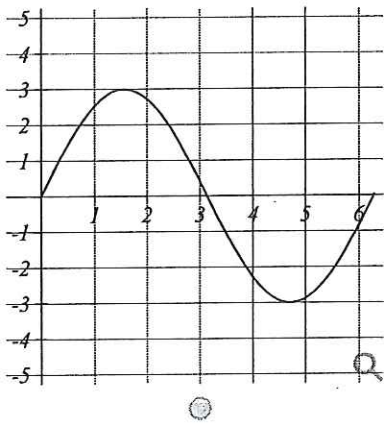
Pre-Calculus (12) Week 9

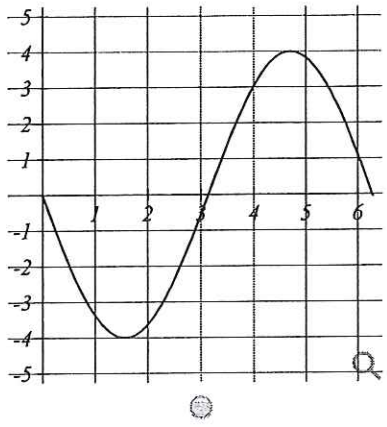
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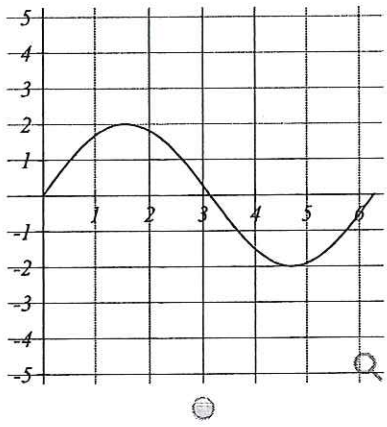
#1 Points possible: 1. Total attempts: 1

Which of the following graphs is the correct plot of $y = 3\sin(x)$?



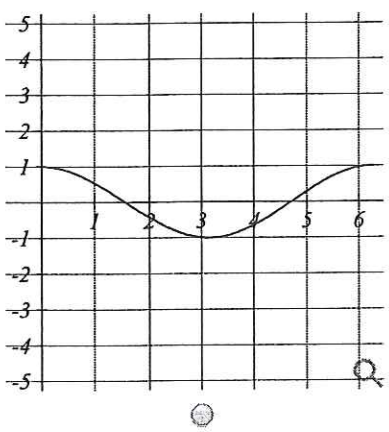


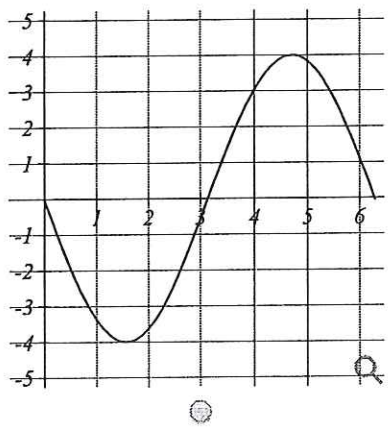


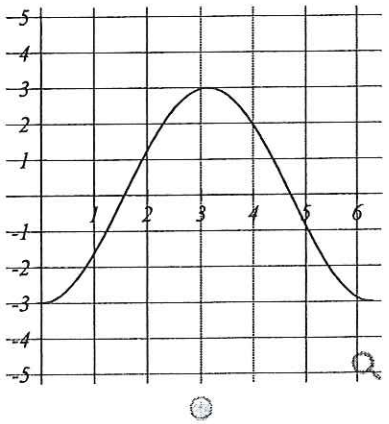


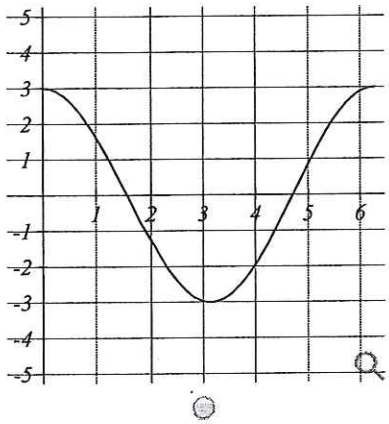
#2 Points possible: 1. Total attempts: 1

Which of the following graphs is the correct plot of $y = -3\cos(x)$?









#3 Points possible: 1. Total attempts: 1

Given the equation $y = 2\sin(4(x + 8)) + 7$

The amplitude is: _____

The period is: _____

The horizontal shift is: _____ units to the Select an answer ▼

The midline is: y = _____

#4 Points possible: 1. Total attempts: 1

A ferris wheel is 40 meters in diameter and boarded from a platform that is 3 meters above the ground. The six o'clock position on the ferris wheel is level with the loading platform. The wheel completes 1 full revolution in 6 minutes. The function $h = f(t)$ gives your height in meters above the ground t minutes after the wheel begins to turn.

What is the Amplitude? _____ meters
What is the Midline? y = _____ meters
What is the Period? _____ minutes
How High are you off of the ground after 3 minutes? _____ meters

---

#5 Points possible: 1. Total attempts: 1

A ferris wheel is 50 meters in diameter and boarded from a platform that is 5 meters above the ground. The six o'clock position on the ferris wheel is level with the loading platform. The wheel completes 1 full revolution in 2 minutes. The function $h = f(t)$ gives your height in meters above the ground t minutes after the wheel begins to turn. Write an equation for $h = f(t)$.

$f(t) =$ _____
