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Est. 1997

Precalculus (Standard or Honors)
(College Trigonometry)
221

Readiness Assessment Test

Thank you for considering this course for your student. Here are some tips for success in the Readiness Assessment process.

- Please do not provide your student this assessment or its contents until you are ready for him or her to complete it in a single sitting with no books, notes, or outside help. It is intended to be a spot check of retained knowledge and skill.

- Make sure you have the latest version of this assessment. Ideally, please download it and have your student complete it within one week prior to enrollment.

- Completed Readiness Assessment materials for a course should be submitted immediately after you enroll in the course.

- **Readiness Assessment materials must be submitted by uploading from the Family Account in the Enrolled Courses view**. Readiness Assessment materials are not accepted through email.

- Visit Live Chat, or email TPS Support (support@pottersschool.org) for questions or assistance.

Part I: Academic Background (to be completed by the parent)

Age/Grade

1. How old will your student be as of **October 1st** of the academic enrollment year?

2. What grade will your student be in **at the start of this course**?

Related Coursework

1. Please provide the following background information for the student's completed or in progress **Algebra 2** *and* **Geometry** courses **or equivalent courses**:

   Algebra 2 Course Information

   a. What is the student's in-progress or final course grade (numeric grade if available)?

   b. What is the name of the course provider (e.g., online provider, taught at home, local college)?

   c. What is the name of the course curriculum (title and name of publisher of primary text if known)?

   d. Is the student on-track to complete the entire course/curriculum by the end of the current year (if in-progress)?

   e. How is the course evaluated? Is the work self-checked, parent-checked, or evaluated outside the home?

   f. What percentage (if any) of the student's grade is based on assessments that are completed without access to notes or outside resources and completed in a single sitting without the opportunity for rework to improve the grade?

   Geometry Course Information

   a. What is the student's in-progress or final course grade (numeric grade if available)?

b. What is the name of the course provider (e.g., online provider, taught at home, local college)?

c. What is the name of the course curriculum (title and name of publisher of primary text if known)?

d. Is the student on-track to complete the entire course/curriculum by the end of the current year (if in-progress)?

e. How is the course evaluated? Is the work self-checked, parent-checked, or evaluated outside the home?

f. What percentage (if any) of the student's grade is based on assessments that are completed without access to notes or outside resources and completed in a single sitting without the opportunity for rework to improve the grade?

Additional Background

1. Is your student's first language English or a different language? If different, what is his or her language background? (**Note:** Most TPS classes are designed for native English speakers, but we also provide support at several levels for students whose first language is not English.)

2. Is there additional information that might help us better know your student and understand his or her unique abilities and needs for the best course placement and academic outcome?

Part II: Readiness Test (to be completed by the student)

- Take this test on your own without the help of a book, notes, Google or other people.
- You **may** use a *scientific calculator*, but you **may not** use a *graphing calculator*.
- Students enrolling in the **standard** course option should complete **ONLY** questions 1-35.
- Students enrolling in the **honors** course option must complete **ALL** questions (1-40).

Answer the following questions by highlighting or circling the correct answer choices.

1. Solve this equation: $2x^2 - 3x - 9 = 0$

   a. 3, -3 b. 3, $\frac{-3}{2}$ c. -3, $\frac{9}{2}$ d. -3, $\frac{3}{2}$

2. Write the equation of the line through the points (1, 1) and (2, -1).

   a. y = -2x + 3 b. y = 2x – 1 c. y = $\frac{-1}{2}$ x + 1 d. y = x

3. Find f(-2) for the function: $f(x) = 2x^2 - 8x$

   a. 8 b. 32 c. 0 d. 24

4. Simplify in radical form: $\sqrt{12} - \sqrt{45} + \sqrt{75} + 4\sqrt{20}$

   a. $4\sqrt{62}$ b. $7\sqrt{3} - \sqrt{5}$ c. $7\sqrt{3} + 5\sqrt{5}$ d. $29\sqrt{3} + 7\sqrt{5}$

5. Solve this equation: $|2x - 5| \leq 7$

   a. $-1 \leq x \leq 6$ b. $-7 \leq x \leq 7$ c. $x \leq 6$ d. $-2 \leq x \leq 12$

6. Evaluate: $24x^7y^2 \div (6x^3y^5)$

   a. $4x^4y^3$ b. $\frac{4x^4}{y^3}$ c. $\frac{1}{19x^4y^3}$ d. $30x^{10}y^7$

7. Solve for x: $\frac{3}{x} + 1 = \frac{x}{2}$

   a. -4, 2 b. $1 \pm \sqrt{7}$ c. $1 \pm \sqrt{5}$ d. -1

8. Simplify: $\frac{x^2-6x-16}{x^6-10x^5+16x^4} \div \frac{x^2-x-6}{x^8-5x^7+6x^6}$

   a. x^2 b. $\frac{x^2(x-2)^2}{(x+2)^2}$ c. $\frac{x^2-6}{2}$ d. x

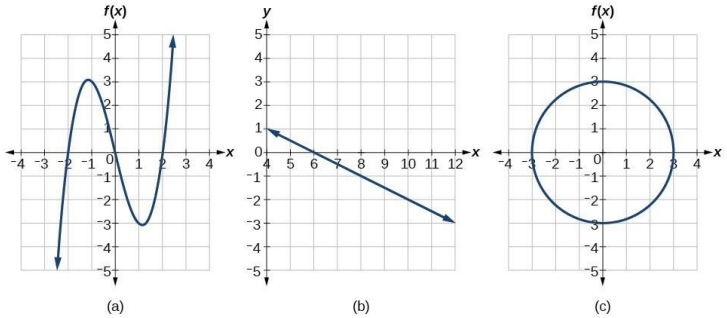
9. Find the distance between the points: (2, 1) and (6, -7)

a. 10 b. $4\sqrt{5}$ c. $2\sqrt{3}$ d. 12

10. Find the center and radius of the circle described by: $(x+3)^2+(y-2)^2=2$

a. C(3, 2) r = 2 b. C(-3, 2) r = 2 c. C(3, -2) r = $\sqrt{2}$ d. C(-3, 2) r = $\sqrt{2}$

11. Which of the following is <u>not</u> a function:



12. If $f(x) = x^2 - kx - 3$ and $f(2) = 9$, then k =

a. 9 b. 2 c. 4 d. – 4

13. Simplify $(8)^{\frac{2}{3}}(16)^{\frac{1}{4}}$

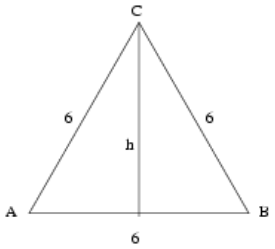
a. 4 b. 8 c. 16 d. 32

14. If $\log_{10} x = 4$, then x =

a. 1000 b. 10 c. $\frac{4}{10}$ d. 10000

15. In the given equilateral triangle with side length 6, find the height, h:

a. 3 b. $3\sqrt{3}$ c. $6\sqrt{3}$ d. $3\sqrt{2}$



16. Find the zeros of the polynomial: $f(n) = 3n^3 - 6n^2 - 72n$

a. 6, -4 b. 0, -4, 6 c. 3, -6, -72 d. 0

17. Find the slope of the line through the points: (-2, -1) and (5, -9)

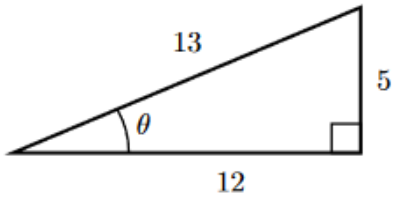
a. $\frac{8}{7}$ b. $\frac{-10}{3}$ c. $\frac{-8}{7}$ d. $\frac{7}{8}$

18. Simplify the expression $(2x-5)^2$

a. $4x^2 - 25$ b. $4x^2 - 20x + 25$ c. $2x^2 - 10x + 25$ d. $4x^2 + 25$

19. Given θ as indicated in the figure, find the ratio for sin θ

a. $\frac{12}{13}$ b. $\frac{5}{12}$ c. $\frac{13}{12}$ d. $\frac{5}{13}$



20. If a right triangle has sides adjacent to the right angle of length 8 cm and 15 cm, what is the measure of the hypotenuse?

a. 13 cm b. 17 cm c. 120 cm^2 d. 289 cm

21. When the circumference of a circle is 18 pi, find the area of this circle.

a. 36 pi b. 9 c. 81 pi d. 18

22. Give the next term in the sequence $\left\{\frac{1}{3}, \frac{1}{6}, \frac{1}{12}, \frac{1}{24}, \frac{1}{48}, \ldots\right\}$

a. $\frac{1}{64}$ b. $\frac{1}{96}$ c. $\frac{1}{72}$ d. $\frac{1}{144}$

23. If the $cos\emptyset = \frac{3}{5}$, find the $tan\emptyset$

a. $\frac{4}{3}$ b. $\frac{3}{4}$ c. $\frac{5}{3}$ d. $\frac{5}{4}$

24. Solve the exponential equation: $5^{-n} = 125^{3n+5}$

a. $n = -\frac{3}{2}$ b. $n = -\frac{5}{4}$ c. $n = -\frac{1}{2}$ d. $n = -\frac{5}{3}$

25. Simplify the the expression: $2\log x + \log y$

a. $\log(2x + y)$ b. $\log(x^2 y)$ c. $\log\left(\frac{x^2}{y}\right)$ d. $\log\ (xy)^2$

26. Simplify the expression: $\left(\frac{8x^3}{27y^6}\right)^{-\frac{1}{3}}$

a. $-\frac{2x}{3y^2}$ b. $\frac{8y^2}{27x}$ c. $\frac{3y^2}{2x}$ d. $\frac{27y^2}{8x}$

27. If you are taking a multiple choice test with 10 questions where each question has 4 possible solutions, how many arrangements of answers are there for the test?

a. 40 b. 10000 c. 5040 d. 1048576

28. Find the sum of the arithmetic series: 5 + 9 + 13 + … 85

a. 112 b. 945 c. 990 d. 903

29. Factor the following polynomial completely: $12x^2 – 5x – 3$

a. 12(x – 5)(x – 3) b. (3x – 2)(4x + 1) c. (6x – 3)(2x + 1) d. (4x – 3)(3x + 1)

30. Find the sum: $\frac{7}{x^2+x} + \frac{3}{x-1}$

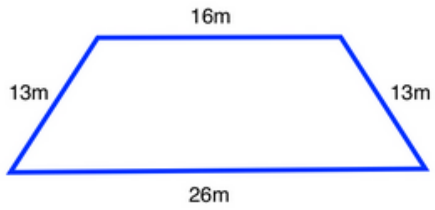
a. $\frac{10}{x^2+2x+1}$ b. $\frac{3x^2+10x-1}{x(x+1)(x-1)}$ c. $\frac{10x-4}{x(x+1)(x-1)}$ d. $\frac{3x^2+10x-7}{x(x+1)(x-1)}$

Answer the following questions by showing your work thoroughly:

31. Determine the solution to the following system of equations: $\begin{cases} 6x + 6y = 24 \\ 10x - y = -15 \end{cases}$

32. Simplify by finding the product: $(x - 3)(x^2 + 3x + 5)$

33. Given an isosceles trapezoid with base lengths of 16m and 26m, opposite side lengths of 13m, then find the area.



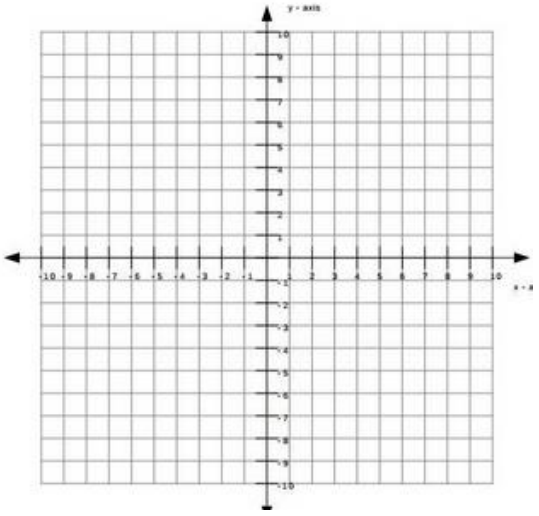
34. Find the equation of the line perpendicular to x + 2y = 8 and passing through the point (4, 1).

35. Solve this equation: $5 = x^2 - 7x + 8$

Students enrolling with the <u>Honors Precalculus</u> option must answer the following additional questions and show all your work thoroughly that leads to the answer.

36. Find the x-intercepts, the y-intercepts and the vertex and sketch the graph for this function:

$y = x^2 - 2x - 8$



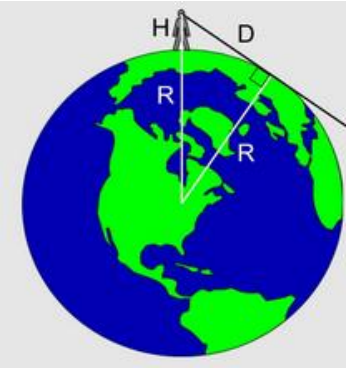
37. Given the function: $f(x) = \frac{3}{\sqrt{2x-1}}$

a. Find the domain

b. Find the range

c. Find f(23)

38. Assume the earth is a sphere with radius 3956 ft. The top of a lighthouse is 230 feet above sea level. How far away is a ship spotted just on the horizon? Set up an equation and solve using a calculator to round your answer to the nearest hundredth.



39. Given $f(x) = 3x + 1$ and $g(x) = 2x^2 + 4$, find the simplified functions of the following:

a. $f(g(x))$

b. $f(x + a)$

c. $f^{-1}(x)$

40. Solve the equation for x and give the exact simplified solution: $\log_2(x) + \log_2(x - 4) = 3$