Math Summer Assignment

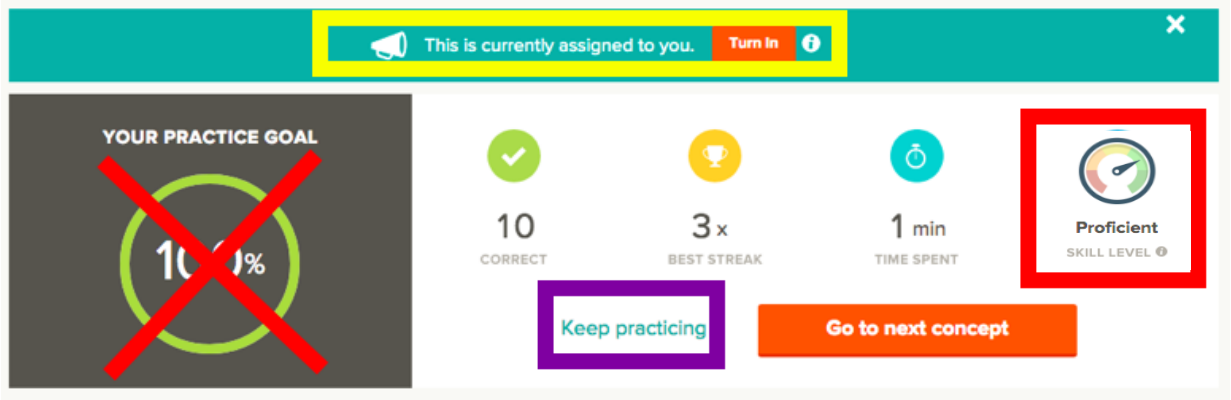
Incoming Students,
To complete your summer assignment, please join your CK-12 class, read and follow the directions below. In order to earn credit you will be turning this in at the end 3rd week of school. (8/26/22)

To join:
1. **Go to www.ck12.org.**
2. Click join to create an account. **Join with your school email account. (Incoming freshmen can use a personal email account.)**
3. Click Groups.
4. Click join a Group.
5. Enter your class code: (Your class is the class you are entering in fall 2022)

Algebra 1 incoming students who completed 8th grade math, enter this code: nqrfl
Honors Geometry incoming students who have completed Algebra 1, enter this code:tiy8f
Integrated Math 2 students who have completed IM1, enter this code: 2habs9
Integrated Math 3 students who have completed Geometry, enter this code: h5n1u
All Pre-Calculus students who have completed Algebra 2, enter this code: pl1v0

Before you begin the summer assignment, please read the following directions carefully!
In order to earn credit, all the following requirements must be met:

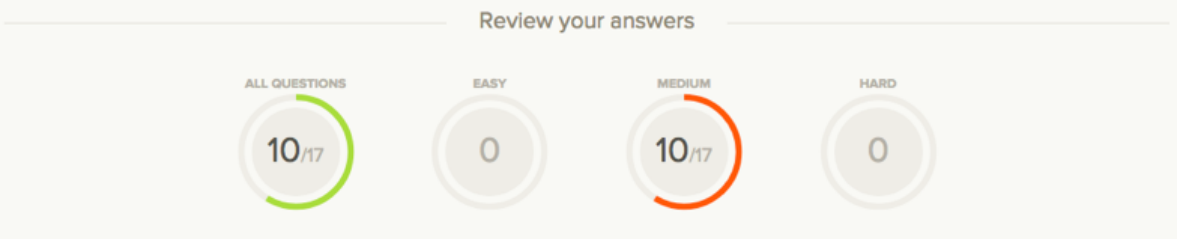
- **ALL PROBLEMS AND WORK MUST BE WRITTEN DOWN AND SUBMITTED FOR ALL SECTIONS AND ALL QUESTIONS!** That means even for definitions you need some sort of picture or sentence explaining how you knew you were correct. **You will be expected to turn this work in at the beginning of the year** so please keep it organized No work = no credit.
- You must complete **AT LEAST 10 problems per section**.
- If you have credit for a section from class, please complete an additional 10 problems.
- **A SKILL LEVEL of proficient must be met** (boxed in red in the picture). This is **NOT** the same as the practice goal (red x in the picture). You are required to do a minimum of 10 questions for each concept, but if your Skill Level is below proficient after 10 questions, you **MUST** do more to receive credit even if the Practice Goal says 100%. To keep doing problems, you can click on Keep Practicing (boxed in purple). If you do not earn proficient on all sections, **you will not receive credit**! When you have a Skill Level of proficient or above, you must click the Turn In button for EACH section (boxed in yellow).



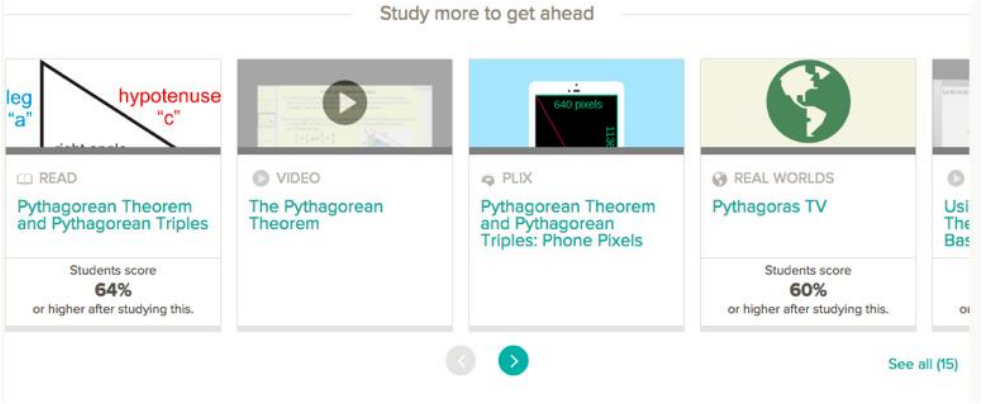
SEE PAGE TWO FOR CONTINUED DIRECTIONS

As you are working:

- **You should be actively re-learning the material, not just guessing and trying to make it work.** That means you may need to study or review topics BEFORE you start doing problems or when you start getting several wrong. There may also be a few topics that are new to you, and will serve as a preview.
- **Guessing will make you do significantly more problems to get a proficient level and we cannot reset your skill level, so stop and review if you get more than one wrong in a row!**
- Review your answers so far after doing 10 problems or more. See what kind of problems you keep missing if your skill level is below 75%.



- Scroll down to the section that says Study More to Get Ahead. Use those resources. You will not be able to earn a Proficient Skill Level by guessing.



- You may also use past notes, YouTube videos, or other online resources like Khan Academy to help improve your understanding.

Continue scrolling down for Calculus summer assignment- it will be on the next page.

Attached is a summer homework packet, which will be due the first day of Calculus class in August. The material in the packet should be material you learned in Algebra II and Precalculus.

You will turn in the packet the first day of Calculus class, and it will count as a daily grade. During the first week of school, you will take a test on the material in the packet.

My recommendation is that you look over the problems in the packet when you receive it but that you wait until the week or two before school starts to work the problems so that you will remember the material very well when school starts. Being confident with the unit circle solving trig identities and equations will make Calculus much easier. If you need additional practice on these skills please email me.

I am looking forward to seeing you in Calculus in August!

Mrs. Pariseau

CALCULUS

SUMMER HOMEWORK

This homework packet is due the first day of school. It will be turned in the first day of Calculus class and will count as a daily grade. You will take a test on the material in the packet during the third week of school.

Work these problems on notebook paper. All work must be shown.
Use your graphing calculator only on problems 44 - 55.

Find the *x*- and *y*-intercepts and the domain and range, and sketch the graph. No calculator.

1. $y = \sqrt{x-1}$
2. $y = \sqrt{9-x^2}$
3. $y = \dfrac{|x|}{x}$
4. $y = \sin x,\ -2\pi \le x \le 2\pi$
5. $y = \cos x,\ -2\pi \le x \le 2\pi$
6. $y = \tan x,\ -2\pi \le x \le 2\pi$
7. $y = \cot x,\ -2\pi \le x \le 2\pi$
8. $y = \sec x,\ -2\pi \le x \le 2\pi$
9. $y = \csc x,\ -2\pi \le x \le 2\pi$
10. $y = e^x$
11. $y = \ln x$
12. $y = \begin{cases} -1, \text{ if } x \le -1 \\ 3x+2, \text{ if } |x| < 1 \\ 7-2x, \text{ if } x \ge 1 \end{cases}$
13. $y = \begin{cases} x^2+1, \text{ if } x > 0 \\ -2x+2, \text{ if } x \le 0 \end{cases}$

Find the asymptotes (horizontal, vertical, and slant), symmetry, and intercepts, and sketch the graph. No calculator.

14. $y = \dfrac{1}{x-1}$
15. $y = \dfrac{1}{(x+2)^2}$
16. $y = \dfrac{2(x^2-9)}{x^2-4}$
17. $y = \dfrac{x^2-2x+4}{x-1}$

Solve. No calculator.

18. $x^2 - x - 12 > 0$
19. $(x-2)^2(x+1)^3(x-5) \le 0$
20. $\dfrac{3x-2}{x+4} \le 0$
21. $\dfrac{(2x+5)(x-1)^2}{(x+2)^3} \ge 0$

Evaluate. No calculator.

22. $\cos\dfrac{5\pi}{6}$
23. $\sin\dfrac{3\pi}{2}$
24. $\tan\dfrac{5\pi}{4}$
25. $\sin\dfrac{7\pi}{4}$
26. $\cos\pi$
27. $\tan\dfrac{2\pi}{3}$
28. $\sec\dfrac{4\pi}{3}$
29. $\csc\dfrac{\pi}{4}$
30. $\cot\dfrac{2\pi}{3}$

Evaluate. No calculator.

31. $\tan\left(\text{Cos}^{-1}\left(-\dfrac{\sqrt{3}}{2}\right)\right)$
32. $\sec\left(\text{Arc}\sin\left(-\dfrac{\sqrt{2}}{2}\right)\right)$
33. $\cos\left(\text{Sin}^{-1}(2x)\right)$
34. $\sec\left(\text{Arc}\tan(4x)\right)$

Solve. Give exact answers in radians, $0 \le x \le 2\pi$. No calculator.

35. $2\cos^2 x + 3\cos x - 2 = 0$

36. $2\sin^2 x - \cos x = 1$

37. $\sin(2x) = \cos x$

38. $2\cos(2x) + 1 = 0$

39. $2\csc^2 x + 3\csc x - 2 = 0$

40. $\tan^2 x - \sec x = 1$

41. $2\cos\left(\frac{x}{3}\right) - \sqrt{3} = 0$

42. $\tan(2x) = -\sqrt{3}$

43. $2\sin(3x) - \sqrt{3} = 0$

Solve. Show all steps. Use your calculator, and give decimal answers correct to **three** decimal places.

44. $e^{2x+3} = 37$

45. $e^{2x} - 5e^x + 6 = 0$

46. $e^x - 12e^{-x} - 1 = 0$

47. $\frac{50}{4 + e^{2x}} = 11$

58. $\log_4(x^2 - 3x) = 1$

49. $\ln(5x - 1) = 3$

50. $\log_2(x+3) + \log_2(x-1) = \log_2 12$

51. $\log_8(x+5) - \log_8(x-2) = 1$

52. $\log_6(\log_4(\log_2 x)) = 0$

53. $\log_3(\log_2(\log_5 25)) = x$

54. The number of students in a school infected with the flu t days after exposure is modeled by the function $P(t) = \frac{300}{1 + e^{4-t}}$.

(a) How many students were infected after three days?

(b) When will 100 students be infected?

55. Exponential growth is modeled by the function $n = n_0 e^{kt}$. A culture contains 500 bacteria when t = 0.

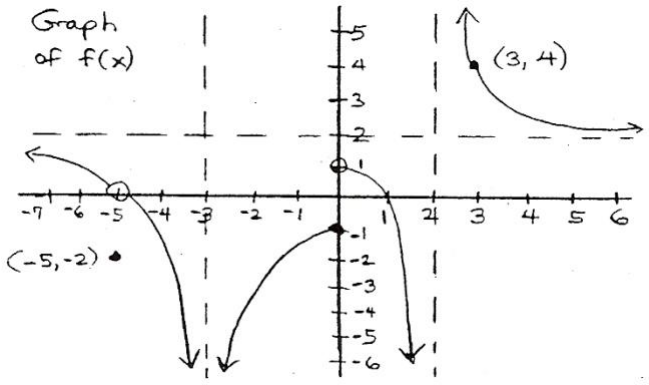
After an hour, the number of bacteria is 1200.

(a) How many bacteria are there after four hours?

(b) After how many hours will there be 8000 bacteria?

Try this, don't worry if you aren't sure we will be discussing limits in detail come August.

Use the figure to find the limit. No calculator.



56. $\lim_{x \to 3} f(x)$

57. $\lim_{x \to \infty} f(x)$

58. $\lim_{x \to 2^+} f(x)$

59. $\lim_{x \to 0} f(x)$

60. $\lim_{x \to -\infty} f(x)$

61. $\lim_{x \to -5} f(x)$