Math Summer Assignment

Incoming Students,
To complete your summer assignment, please join your CK-12 class.

To join:
1. **Go to www.ck12.org.**
2. Click join to create an account. **Join with your school email account.**
3. Click Groups.
4. Click join a Group.
5. Enter your class code:
   > **Integrated Math 1 students enter this code: 37c4z**
   > **Integrated Math 2 students enter this code: 182km**
   > **Integrated Math 3 students enter this code: mrp5y**
   > **All Statistics students enter this code: pb4xj**
   > **All Pre-Calculus students enter this code: ngv5s**
   > **All Calculus students have a separate assignment not on CK12. Instructions that can be found at the end of these directions.**

In order to earn credit, the following requirements must be met:

- **ALL PROBLEMS AND WORK MUST BE WRITTEN DOWN AND SUBMITTED FOR ALL 20 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 submit organized No work = no credit.
- You must complete **AT LEAST 10 problems per section**.
- **A SKILL LEVEL of 75% 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 75% 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 75% on all sections, **you will not receive credit**! When you have a Skill Level of 75% 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.
- **Guessing will make you do significantly more problems to get 75%and I cannot reset your percentage for you, 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%.
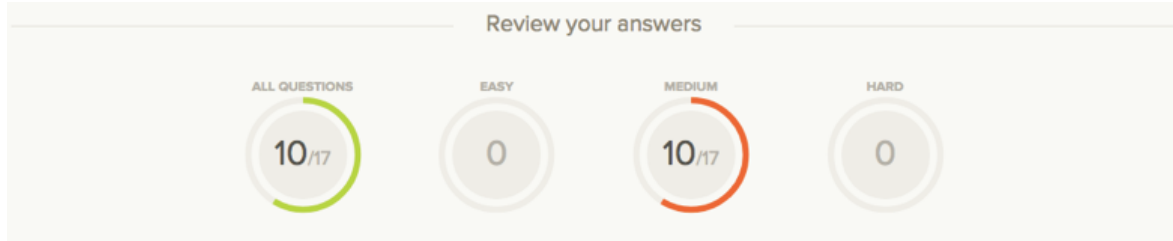
- Scroll down to the section that says Study More to Get Ahead. Use those resources. You will not be able to earn 75% Skill Level by guessing.

- Use past notes, youtube vidoes, 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

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 <u>notebook paper</u>. All work must be shown.
Use your graphing calculator only on problems <u>44 - 55</u>.

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

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. <u>No calculator</u>.

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. <u>No calculator</u>.

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. <u>No calculator</u>.

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. <u>No calculator</u>.

31. $\tan\left(\cos^{-1}\left(-\dfrac{\sqrt{3}}{2}\right)\right)$ 32. $\sec\left(\operatorname{Arcsin}\left(-\dfrac{\sqrt{2}}{2}\right)\right)$

33. $\cos\left(\operatorname{Sin}^{-1}(2x)\right)$ 34. $\sec\left(\operatorname{Arctan}(4x)\right)$

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. $2\cos\left(\dfrac{x}{3}\right) - \sqrt{3} = 0$ 42. $\tan(2x) = -\sqrt{3}$ 43. $2\sin(3x) - \sqrt{3} = 0$

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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. $\dfrac{50}{4 + e^{2x}} = 11$ 58. $\log_4\left(x^2 - 3x\right) = 1$ 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. $\log_6\left(\log_4\left(\log_2 x\right)\right) = 0$ 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 $P(t) = \dfrac{300}{1 + e^{4-t}}$.

(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?

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Use the figure to find the limit. No calculator.

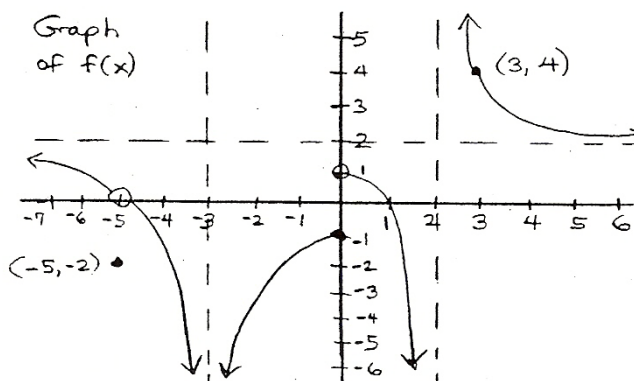56. $\lim\limits_{x \to 3} f(x)$ 57. $\lim\limits_{x \to \infty} f(x)$

58. $\lim\limits_{x \to 2^+} f(x)$ 59. $\lim\limits_{x \to 0} f(x)$

60. $\lim\limits_{x \to -\infty} f(x)$ 61. $\lim\limits_{x \to -5} f(x)$

Graph of f(x)

(3, 4)

(-5, -2)

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62. $f(x) = \begin{cases} 1 - x, & x \le 1 \\ x^2, & x > 1 \end{cases}$ (a) $\lim\limits_{x \to 1^-} f(x)$ (b) $\lim\limits_{x \to 1^+} f(x)$ (c) $\lim\limits_{x \to 1} f(x)$

63. $f(x) = \begin{cases} \dfrac{x^2 - x - 6}{x - 3}, & x \ne 3 \\ 4, & x = 3 \end{cases}$ (a) $\lim\limits_{x \to 3} f(x)$ (b) $f(3)$

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Use the **definition of the derivative** to find the derivative. <u>No calculator.</u>

$$f'(x) = \lim_{h \to 0} \frac{f(x+h) - f(x)}{h}. \quad \text{(You must \underline{\textbf{know}} this formula.)}$$

64. $f(x) = x^2 - 8x$

65. $f(x) = \sqrt{x+9}$

66. $f(x) = \dfrac{3}{x-4}$

67. $f(x) = x^3 + 2x^2 - x + 4$

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