

HACT Workshop

Calculus is Easy, Algebra is Hard!

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AP Calculus Resource Site

<http://online.math.uh.edu/apcalculus/>

Over 40 Online Quizzes and AP Practices Exams

<http://www.estudy.uh.edu/>

Some Free Stuff

- Online resources for Calculus and Finite Math: <http://www.zweigmedia.com/RealWorld/utlsindex.html>
- Sage: <http://sagemath.org>
- Geogebra: <http://www.geogebra.org/cms/>
- Winplot: <http://math.exeter.edu/rparris/winplot.html>
- GraphFunc Online: <http://graph.seriesmathstudy.com/>
- SpaceTime: <http://www.spacetime.us/>
- Graph: <http://www.padowan.dk>

Most of us do some kind of review at the start of the year or maybe even a “summer assignment”.

ARE YOU READY FOR CALCULUS?

- Simplify: (a) $\frac{x^3 - 9x}{x^2 - 7x + 12}$ (b) $\frac{x^2 - 2x - 8}{x^3 + x^2 - 2x}$ (c) $\frac{\frac{1}{x} - \frac{1}{5}}{\frac{1}{x^2} - \frac{1}{25}}$ (d) $\frac{9 - x^{-2}}{3 + x^{-1}}$
- Rationalize the denominator: (a) $\frac{2}{\sqrt{3} + \sqrt{2}}$ (b) $\frac{4}{1 - \sqrt{5}}$ (c) $\frac{1}{1 + \sqrt{3} - \sqrt{5}}$
- Write each of the following expressions in the form ca^pb^q where c, p and q are numbers:
(a) $\frac{(2a^2)^3}{b}$ (b) $\sqrt{9ab^3}$ (c) $\frac{a(2/b)}{3/a}$ (d) $\frac{ab - a}{b^2 - b}$ (e) $\frac{a^{-1}}{(b^{-1})\sqrt{a}}$ (f) $\left(\frac{a^{2/3}}{b^{1/2}}\right)^2 \left(\frac{b^{3/2}}{a^{1/2}}\right)$
- Solve for x (do not use a calculator):
(a) $5^{(x+1)} = 25$ (b) $\frac{1}{3} = 3^{2x+2}$ (c) $\log_2 x = 3$ (d) $\log_3 x^2 = 2 \log_3 4 - 4 \log_3 5$
- Simplify: (a) $\log_2 5 + \log_2(x^2 - 1) - \log_2(x - 1)$ (b) $2 \log_4 9 - \log_2 3$ (c) $3^{2 \log_3 5}$
- Simplify: (a) $\log_{10} (10^{1/2})$ (b) $\log_{10} \left(\frac{1}{10^x}\right)$ (c) $2 \log_{10} \sqrt{x} + 3 \log_{10} x^{1/3}$
- Solve the following equations for the indicated variables:
(a) $\frac{x}{a} + \frac{y}{b} + \frac{z}{c} = 1$, for a (b) $V = 2(ab + bc + ca)$, for a
(c) $A = 2\pi r^2 + 2\pi r h$, for positive r (d) $A = P + nrP$, for P
(e) $2x - 2yd = y + xd$, for d (f) $\frac{2x}{4\pi} + \frac{1-x}{2} = 0$, for x

Common Mistakes

Distributing powers:

- $(x + y)^2 = x^2 + y^2$
- $\frac{1}{x + y} = \frac{1}{x} + \frac{1}{y}$
- $\sqrt{x + y} = \sqrt{x} + \sqrt{y}$

Simplifying Trig Functions:

- $\sin(2x) = \sin(2)\sin(x)$ *or* $2\sin(x)$
- $\tan^2(x) = \tan(x^2)$

“Forgotten” Topics

- Domain and Range
- Symmetry
- How to Find Intercepts
- Even/Odd Functions
- Simple Graphs
- Vertical and Horizontal Asymptotes
- Holes

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What to do?

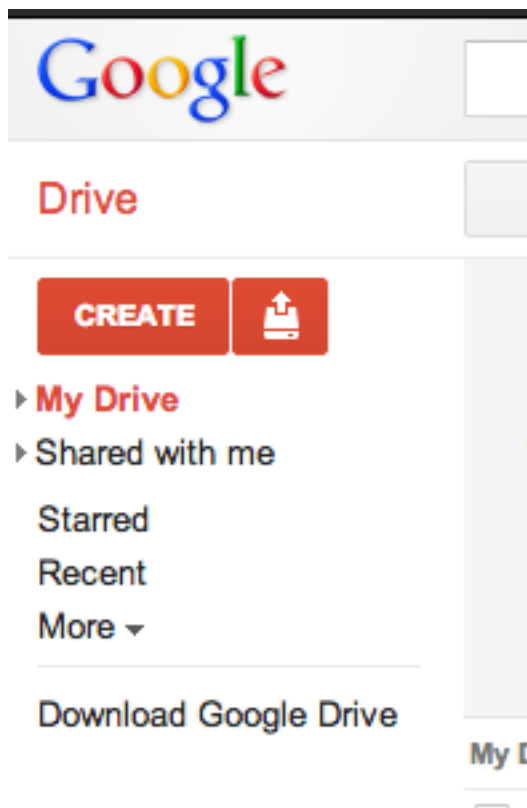
- Expect them to “review” over the summer?
- Review the first few weeks of school?
- Short reviews as needed?

Short reviews as needed?

- We are pressed for time already.....

Creating a Quiz with Google Docs

- Set up a Google Doc Form with your questions.



Algebra Quiz

You can include any text or info that will help people fill this out.

1) Expand $(x+y)^2$

x^2+y^2

$x^2+2xy+y^2$

Question Title: Sample Question 2

Help Text:

Question Type: Text

Their answer

Done Make this a required question

Tutorials:

<http://www.quiz-creator.com/blog/2009/09/making-online-quiz-with-google-docs-1-creating-quizzes/#110>

<http://planetoftheweb.com/components/promos.php?id=534>

Formatting?

- Post a separate document for the questions and they can submit answers through Google Docs.

Use Google Doc to SURVEY Students

Algebra Survey

Indicate your skill level for each topic.

Question Title 1) Vertical Asymptotes

Help Text

Question Type Multiple choice Go to page based on answer

know

know somewhat

don't know

Click to add option [or add "Other"](#)

Make this a required question

Sample Question 2