Testing for public domain (Github ccdm-edu InteractiveHSMath baseline) code v1.0.

Funcionality tested: Home, Trig->Trig Functions, Thanks, Legal, Contact, Teachers. Under Trig->Trig functions, there are 8 pages. Under each page, there is a AutoDemo (StartHere in upper left), Advanced topics, expert/newbie modes and page functionality.

Public domain static binary baseline (StaticBinaries under same Github ccdm-edu) is used only to create a small site for testing and free distribution of website to all. Private repository of static binaries, with artistic works by multiple contributors, is used for testing actual site at interactablemath.org. All testing done on interactablemath.org. Autodemo refers to the automated demonstration of the page which is currently illustrated by a musical note with words "START HERE" and it attracts attention when you first enter page with animation.

I wish to thank Browserstack for allowing me to test this public domain baseline on several devices I do not own. Devices below listed as Audio not available are Browserstack devices without audio access in my free account.

Dates of testing November 2024- January 2025.

Test class	Test performed	Windows 11 desktop Dell XPS 8950			Window s 11 Home laptop (touchsc reen) LG Gram Model 15Z990- RAAS9U 1	iPa d (8 th gen) iOS 18. 1.1	Samsun g Tablet A9+ Android v14.0 Browser stack	iPho ne 13 mini iOS 18.1 .1	Galaxy S24 phone Android 14.0 Browser stack	MacO S (no platfo rm specif ied) MacO S Sequ oia Note 8, 9,10
		Chro me 132. 0	Ed ge 13 1.0 64 bit	Firef ox 134. 0.1	Chrome 131.0	Saf ari 18. 1.1 Bug 15	Firefox 127.0.2	Safa ri 18.1 .1	Chrome 128.0 Note 1 above	Safari 18.1
Math function ality	Go to Trig Functions page 1 Play audio and compare to text given, scroll bars/text ok,	~	~	~	~	~	~	~	~	>

			I						
goes to									
Review									
Concepts									
when done									
Go to Trig	/	/				/		/	
Functions	_	See	Pug	•	Bug	•	Note	Works	Note
page 1		k	Bug 16		14		2	better	7
Click on			10		14		_	verticall	,
Review		do							
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Play all three		not							
videos, Use		wo							
clickme		rk							
button to									
ensure all									
works as per									
audio									
Go to Trig				. /					
Functions									
page 2						See Bug		Bug8	
Try all notes						note 1			
on scale,						below			
expect tone									
sound and									
tone and									
equation plotted. Turn									
on/off sound and ensure									
volume									
button									
works.									
Ensure try a									
song gives 3									
choices and									
try all three.									
Do									
autodemo									
(upper left									
corner) and									
ensure									
voice/animat									
ions correct.									
Hit reset and									
verify all is									
back to									
initial state									

I	1 .	 			l .		
Go to Trig							
Functions				See Bug	Note	Screen	
page 3				note 1	3	is	
Set				below		annoyin	
amplitude to				BCIOW		gly small	
0.8 and click						gry sirian	
30, 120, 210	,						
300 angles							
and ensure							
animation,							
equation							
and plot are							
correct.							
Repeat for							
amplitude							
1.0, adding							
30 degrees							
to all above							
angles.							
Repeat for							
amplitude							
1.1 adding							
subtracting							
30 from							
original							
angle set.							
Do							
autodemo(u							
pper left							
corner) and							
ensure							
voice/anima	t						
ions correct.							
Bring up							
Advanced							
popup and							
drag around							
to ensure							
correct and							
verify all							
content is							
present							
Go to Trig							
Functions							
page 4		Bug		See Bug			
Follow		16		note 1			
				below			
instructions							
on clicking							

T					
dots all the					
way around					
once					
Hit clear and					
verify					
plots/eqtns					
gone then					
follow dots					
and verify					
you hit every					
other dot					
Click dots					
following					
instructions					
and verify					
you hit only					
axis dots.					
Click dots					
following					
instructions					
and verify					
you hit 120					
degree angle					
pts					
Verify it					
won't tell					
you what					
points to					
click on last					
time.					
Hit start over					
and verify it					
asks you to					
click every					
point again.					
Hit a point or					
two then let					
timer expire					
at 30 sec and					
verify a					
popup					
modal					
window					
explains					
what					
happened					
and starts					
you over					
				1	

Click on autodemo and listen to all 4 segments and verify words/anima tions match. Check advanced popup and verify correctness of tabs and draggability							
Go to Trig Functions page 5 Hit start button and verify equations, table, and plot and equation above it updates correctly. Check again at speed 1.1 Hz. Check at speed 2 Hz and use cell phone timer to verify time is roughly correct. Hit pause to verify, hit clear and verify Click on autodemo and listen to all 3 segments and verify	>	Bug 16,1 7	Bug 11	See Bug note 2 below	Bug 11	Bug9, 10	

words/ar tions mat Check advanced popup ar verify correctned of tabs ar draggabil	cch. I nd ess nd								
Go to Trig	g 🗸	/	/	/	/	/	/	✓	~
Functions page 6 Turn on t and verifice equation, ph and to is correct frequence with cellphone tuner app Take amplitud 50 and 10 and verifice not obnoxiou Take phase to 90 and verify costake phase to 180 and verify inverted Play with max frequence and huge/smanegative numbers verify incorrect numbers verify incorrect numbers cannot be added. Note that the phase to 180 and the character	one y /gra one y /gra one y e to 00 y us. see I sine, se id sine r r s all/ and		Not e 11	Max volume is too loud, at 1000 Hz, not so at higher freq. Demo is fine	Not e 6	See Bug note 3 below	Note 4 Bug 12		

1000, max is 10000 Change max freq to 3000, set freq to 2500, amplitude to 10, phase to 0 and verify sound is at 2500 Hz with cellphone tuner app. Click on autodemo and listen to both segments and verify words/anima tions match. Check advanced popup and verify							
correctness of tabs and draggability Go to Trig Functions page 7 Select pick an instrument, select flute and ensure b4flat is note given. Orange plot of flute and aqua sine wave plot. Turn on note and ensure it plays and volume works. Turn	>	>	\	>	~	~	~

				_		, ,				
	on sine wave									
	and ensure it									
	plays and									
	volume bar									
	works. Turn									
	both on at									
	same time to									
	ensure they									
	work									
	together.									
	Ensure									
	frequency/p									
	eriod arrows									
	show up									
	under the									
	graph									
	Click on									
	autodemo									
	and listen to									
	both									
	segments									
	and verify									
	words/anima									
	tions match.									
	Check									
	advanced									
	popup and									
	verify									
	correctness									
	of tabs and									
	draggability								•	
	Go to trig		/							
	functions									Seek
	page 8 and									works
	play the									fine
	summary									
	video to									
	ensure all									
	works.									
	Should be									
	about 8 min									
	long									
Expert	Default on	/	/				/		/	
mode	home page				▼	•	▼		_	
	is newbie									
	mode.									
	Choose									
	expert mode									
								•	•	

	and visit all pages under Trig section to ensure they give helpful hints on how to use page (newbie mode assumes you rely on autodemo)									
Site Navigati on	When in Trig topic, ensure back button and next buttons take to correct page and highlight is correct on left menu (mobile doesn't have left menu)	~	~	>	~	✓	~	Bug 13	~	>
Cookies	IF left menu is present, verify that selecting cookies takes away the red slash on the cookie and that rejecting cookies puts the red slash back in there (there are no extra cookies used at this time anyway).	~	~	>		\		N/A Mob ile, no left men u	N/A Mobile, no left menu	>
Landing page	Verify appropriate	~	/	>	~	~	~	\	>	>

	message is displayed along with choice of expert/newb ie and autodemo intro. Ensure autodemo works properly						See bug note 4 below	Note 5		
Privacy/ Terms	If left menu present, verify the link for privacy/term s works. Check one of the pages in Trig functions to verify footer links work. Go to Legal tab on upper menu and verify both terms/privac y are present and complete.		\		Need full screen mode to get to footnote s at page bottom	\		>	>	\
Thanks	Verify thank you page looks good and all 3 contributors logos/hot links work	~	~	~	~	~	~	>	\	~
Contact	Go to contact page, choose subject website bug found, bogus name and email and under	~	~		~	~	Fail (but failure message was correct). See bug note 6	\	~	~

a u c g	message arrives under company gmail account									
	Verify links work	~	>	\	~	~	See bug note 5	~	~	~

Bug Notes:

- 1. Firefox left menu sidebar still expands too much into the content itself, only on this device, this browser. Using Chrome 128.0 on same device, no problem. This happens on trig functions pages 2,3,4,7 and only when activate automated demo.
- 2. Firefox moves the start/pause button into the highest end of the frequency slider bar so you can only get up to 1.9Hz max. Using Chrome 128.0 on same device, no problem.
- 3. Firefox does not give enough digits to the max frequency to show up to 10,000 Hz, although it does work. Using Chrome 128.0 on same device, no problem. Further, on firefox, amplitude sound behaved strangely, may be a testing artifact. Low values change correctly but then sound saturates at some level—can't test this on chrome.
- 4. Device Tablet A9+ Galaxy under Firefox incorrectly came back that it was a mobile device. Using Chrome 128.0 on same device, no problem
- 5. Device Tablet A9+ firefox, the left menu extends out too much into the content page. Using Chrome 128.0 on same device, no problem
- 6. Device Tablet A9+ firefox did not send the message to correct gmail location but that was correctly reported back to the user. Using Chrome 128.0 on same device, no problem, message delivered correctly.
- 7. For very wide pages on android mobile, the hamburger menu is on far far right of screen and when selected, the dropdown items are on far far left of screen. BPT20 fixed this and moved hamburger menu to left for all pages/devices
- 8. Android S24 Browserstack device didn't work well in horizontal mode—either font size/zoom went to super huge or it totally lost the page. May be a testing artifact.
- 9. On page 5 of trig section, where sine goes faster, the table with theta=2pi(ft) jumps around a lot on the right hand side. Its mildly annoying.
- 10. On the autodemo drop down segment selector, occasionally it dropped down with values of 1 2 3 2 3 2 3 when it should only have been 1 2 3. The later most values still "worked". On reloading the page, problem went away. Intermittent problem not fully pursued.

- 11. On iPhone, the start/pause button has the text moved too far to the right, causing the last letter to be truncated off. The result is pause becomes paus and clear becomes clea
- 12. Very occasionally on page 7 where autodemo human voice is added to tones, the tones wont play on this device. I suspect it happens when device goes into sleep and comes back out. Did not pursue this. Refreshing the page seems to fix the problem.
- 13. On this device, when in summary page of trig functions, the back button does not seem to work. Wrote up BPT24 to try and fix it.
- 14. On this device, when try to hit the click me, the tool tip stays up the whole time obscuring the table, will move tool tip to bottom. Originally was set to left so not sure why it went to the right anyway...BPT25 set to fix this.
- 15. On the left menu of all the trig pages with iPad in vertical, we lose the right hand side of the border around the legal notice. I don't consider this worth fixing as all the text is there and don't want to increase width of left menu. All this goes away when we rotate iPad to horizontal.
- 16. The click me timer seems to be off. The MP4 time is correct but something about the updating of time on timer is slow and numbers aren't getting updated. For example, Time should be 9.45 sec but timer registers 8.6 sec. On page 4, this problem manifests when we click all 12 points (I suspect error accumulates more) and the timer measures 10.8 sec when it should be closer to 12 sec (verified by independent stop watch). On page 5, the 2Hz timer is way off compared to my cell phone timer. Segment 2 of Autodemo on page 5 pause time is more off that other browsers (24.2 sec vs 25 sec) but the imprecision is mentioned in audio and values are correct.
- 17. Frequency slider max value gets pushed under start button in firefox. Can still access it with arrow buttons.

Notes (in General):

May need to dump cache and local storage if any changes made to website to see the changes on your client. Seek function on MP4 does not work on Chrome and Edge but does work on Firefox and Safari. The reason is believed to be that the former browsers send a signal to the server for seek that Pythonanywhere does not respond to and the later browsers do not send that signal. When static content (MP3 and MP4) are moved to a CDN server, this problem should go away.

- Note 1: Audio is not available on these devices via Browserstack so cannot test sound.
- Note 2: iPhone automatically goes to full screen mode, making blue button on site inaccessible. Selecting "picture within picture' button allows one to view video and access blue Button on site
- Note 3: Need to expand unit circle (on default size) in order to be able to use touchscreen to select dots. When you expand, of course you loose more of the animation. Best horizontal. The (x,y) values when r is other than unit circle meld into other values, would be better as no wrap but then that would move out the theta column and make it all harder to fit in small space. Will add to bug list to fix.
- Note 4: cannot verify frequency with tuning app as its on same device, one shuts down the other.
- Note 5: need to open Safari, bookmarks then history and delete all history to ensure old versions of site were not present in cache if upgrades made
- Note 6: if untouched, iPad goes into "doze" then "sleep". If this happens during autodemo, all sound will stop and you need to exit autodemo and restart it to get any sound to work.

Note 7: Initially, the MP4 did not load up when first entered page, It appeared like a failure had to select manually. Once in cache, it reloaded up on the page fine. Maybe Browserstack is unusually slow to acquire files sometimes?

Note 8: Browserstack seems to be intentionally keeping me from accessing items under far left menu which would give exact version of OS (and probably dangerous stuff?)

Note 9: initially had a lot of trouble dragging advanced popup box with mouse, then it eventually "just worked" but only more or less, not all the time. May be Browserstack testing artifact?

Note 10: On this device, some audio issues: 1. When I increase amplitude, some kind of internal AGC kicks in and amplitude decreases so eventually amplitude is same. 2. Hitting play on autodemo has to sometimes be done twice if not in cache in order to get it to play but the issue is that the javascript animation keeps going so it can get out of sync. If the autodemo explaination file is in cache, hitting play once is enough 3. It had trouble playing 8 kHz as well, had to crank up volume

Note 11: Frequency sliders in Firefox are way longer than all three other browsers (which are pretty similar to each other). This means during autodemo, the red cursor is in the wrong place to effect desired change. This is an annoying but cosmetic problem as the code chooses the values and the autodemo still works as intended.