

	goes to Review Concepts when done									
	Go to Trig Functions page 1 Click on Review Concepts Play all three videos, Use clickme button to ensure all works as per audio	✓	✓ See k does not work	✓ Bug 16	✓	✓ Bug 14	✓	✓ Note 2	✓ Works better vertically	✓ Note 7
	Go to Trig Functions page 2 Try all notes on scale, 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/animations correct. Hit reset and verify all is back to initial state	✓	✓	✓	✓	✓ See Bug note 1 below	✓	✓ Bug8	✓	

	<p>Go to Trig Functions page 3</p> <p>Set amplitude to 0.8 and click 30, 120, 210, 300 angles and ensure animation, equation and plot are correct.</p> <p>Repeat for amplitude 1.0, adding 30 degrees to all above angles.</p> <p>Repeat for amplitude 1.1 adding subtracting 30 from original angle set.</p> <p>Do autodemo(upper left corner) and ensure voice/animations correct.</p> <p>Bring up Advanced popup and drag around to ensure correct and verify all content is present</p>	✓	✓	✓	✓	✓	✓ See Bug note 1 below	✓ Note 3	✓ Screen is annoyingly small	✓
	<p>Go to Trig Functions page 4</p> <p>Follow instructions on clicking</p>	✓	✓	✓ Bug 16	✓	✓	✓ See Bug note 1 below	✓	✓	✓

	Click on autodemo and listen to all 4 segments and verify words/animations 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 16,17	✓	✓ Bug 11	✓ See Bug note 2 below	✓ Bug 11	✓ Bug9, 10	✓

	words/animations match. Check advanced popup and verify correctness of tabs and draggability									
	<p>Go to Trig Functions page 6</p> <p>Turn on tone and verify equation/graph and tone is correct frequency with cellphone tuner app</p> <p>Take amplitude to 50 and 100 and verify not obnoxious. Take phase to 90 and verify cosine, take phase to 180 and verify inverted sine</p> <p>Play with max freq, add other characters and huge/small/negative numbers and verify incorrect numbers cannot be added. Min number is</p>	<p>✓</p> <p>✓</p>	✓	<p>✓</p> <p>Note 11</p>	<p>✓</p> <p>Max volume is too loud, at 1000 Hz, not so at higher freq. Demo is fine</p>	<p>✓</p> <p>Note 6</p>	<p>✓</p> <p>See Bug note 3 below</p>	<p>✓</p> <p>Note 4 Bug 12</p>	✓	✓

	message is displayed along with choice of expert/newbie 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/terms 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/privacy are present and complete.	✓	✓	✓	✓ Need full screen mode to get to footnotes 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	✓	✓	✓

	subject, type the device/browser you are using and verify the message arrives under company gmail account									
Teachers	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 $\theta=2\pi(ft)$ 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 explanation 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.