

Free Response Final Review

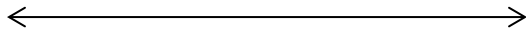
Determine the amplitude or critical points, period and phase shifts or asymptotes. Then graph **one period** of the function.

1. $f(x) = 2\cos\left(\pi x - \frac{\pi}{2}\right)$

Amplitude: _____

Period: _____

Phase Shift: _____



2. $y = -\sin 2\pi x - 1$

Amplitude: _____

Period: _____

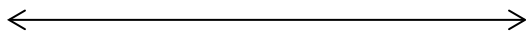


3. $f(x) = \tan \frac{x}{2} + 2$

Critical Points: _____

Period: _____

Asymptotes: _____

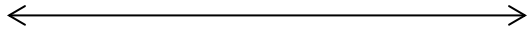


4. $f(x) = -\sec\left(\pi x + \frac{\pi}{2}\right) - 1$

Amplitude: _____

Period: _____

Phase Shift: _____



5. $y = \cot\left(\frac{\pi}{4}x - \frac{\pi}{2}\right) + 1$

Critical Points: _____

Period: _____

Asymptotes: _____



6. $f(x) = -\csc\left(x - \frac{\pi}{2}\right) + 1$

Amplitude: _____

Period: _____

Phase Shift: _____



Find the exact value of each of the following. Draw a triangle or point and label. Show all necessary work.

Find the exact value. Show all work.

7. $\sin \frac{-2\pi}{3}$

8. $\tan \frac{7\pi}{4}$

9. $\cot \frac{3\pi}{2}$

10. $\csc \frac{\pi}{2}$

11. $\cos \frac{2\pi}{3}$

12. $\sec \frac{13\pi}{6}$

Use trigonometric identities to prove the following.

13. $\sec x - \tan x = \frac{\cos x}{1 + \sin x}$

14. $\frac{\csc^2 t}{\cot t} = \csc t \sec t$

15. $\frac{1}{\tan x} + \tan x = \frac{\sec^2 x}{\tan x}$

16. $1 - \frac{\sin^2 \theta}{1 + \cos \theta} = \cos \theta$

17. The average GMAT scores for students entering the graduate school of business at UGA was 631. Assuming scores are normally distributed and the standard deviation is 80, find the following:

a. The probability that a student scored below 500

b. The probability that a student scored between 500 and 700

c. The probability that student scored above 600.

d. One student scores in the 96th percentile. What as the students score?

A survey was conducted at a local high school to see how many students graduate and the gender of the student. The results are given in the table below. Round to the nearest thousandths if necessary and show all work.

Students	Graduate	Does Not Graduate	Total
Boys	360	18	378
Girls	330	13	343
Total	690	31	721

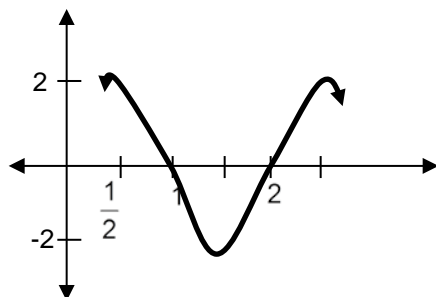
18a. If a student is randomly selected, what is the probability the student is a boy and graduates?

- b. If a student who does not graduate is randomly selected, what is the probability the student is a girl?
- c. If a student is randomly selected, what is the probability the student is a boy or did not graduate?
- d. Is being a boy and graduates independent? Explain using complete sentence and justify with appropriate calculations. Label your work.

1. Amplitude: 2

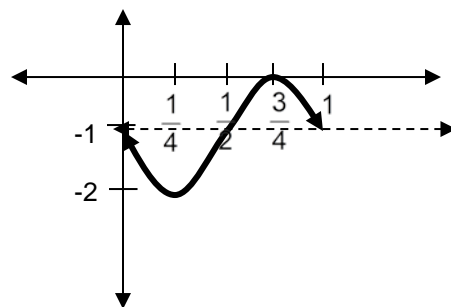
Period: 2

Phase Shift: $\frac{1}{2}$



2. Amplitude: 1

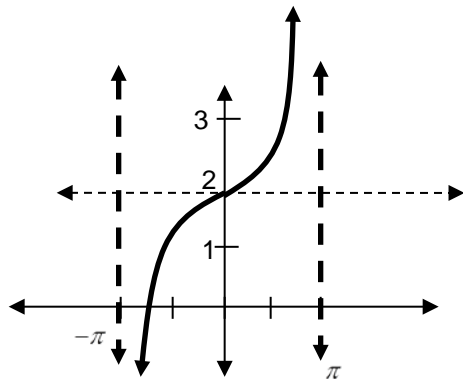
Period: 1



3. Critical Points: 1, 3

Period: 2π

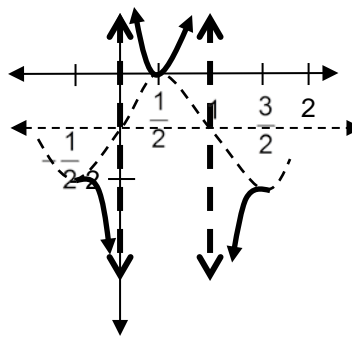
Asymptotes: $x = -\pi$ and $x = \pi$



4. Amplitude: 1

Period: 2

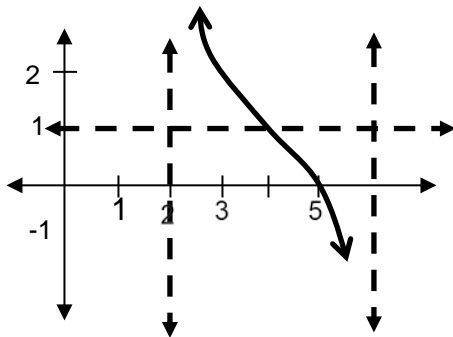
Phase Shift: $-\frac{1}{2}$



5. Critical Points: 2, 0

Period: 4

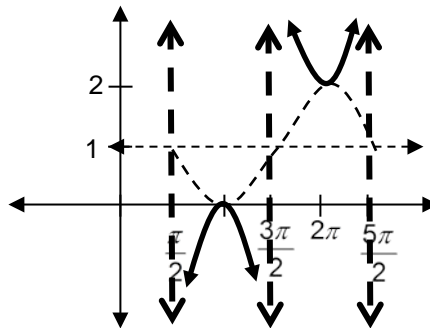
Asymptotes: $x = 2$ and $x = 6$



6. Amplitude: 1

Period: 2π

Phase Shift: $\frac{\pi}{2}$



7. $-\frac{\sqrt{3}}{2}$

8. -1

9. 0

10. 1

11. $-\frac{1}{2}$

12. $\frac{2\sqrt{3}}{3}$

17a. 0.0505

b. 0.7546

c. 0.6517

d. 771

18a. 0.499

b. 0.419

c. 0.542

d. No, $P(B) = 0.524$, $P(B|G) = 0.522$

