

Name: _____

ID: A

Student ID: _____

Pre-Calculus Unit 1 PRACTICE Assessment – 100 points total, 20 questions

Instructions: Answer each question to the best of your ability. Show your work as thoroughly as possible to ensure you earn partial credit on the questions you answer incorrectly.

Vocabulary – 2 points per question, 10 points total (DOK1)

Instructions: Identify the term given the description. Choose from the word bank below.

Radian	Reference Angle	Coterminal Angle	Midline	Amplitude	Period
	Sine	Cosine	Tangent		

1. When the _____ of two angles are the same, they will have the same coordinates. The only difference is the sign of the coordinates, which depends on the quadrant.

Answer: **Reference Angle**

2. How long it takes for one cycle to complete

Answer: **Period**

3. The central angle subtended by an arc the length of the radius

Answer: **Radian**

4. The _____ of a function will always be positive, but the “a” value can be positive or negative

Answer: **Amplitude**

5. The trigonometric ratio that represents the x-coordinate on the unit circle

Answer: **Cosine**

Computational Questions – 5 points per question, 50 points total (DOK2)

Instructions: Choose the best answer from the options provided. You can still receive partial credit on incorrect answers if you show your work.

6. (F.TF.1) Convert to $\frac{7\pi}{12}$ degrees

Answer: _____

- a. 100°
- b. 105°**
- c. 110°
- d. 115°

7. (F.TF.1) Convert 245° to radians

Answer: _____

- a. $\frac{49\pi}{36}$**
- b. $\frac{49\pi}{18}$
- c. $\frac{25\pi}{36}$
- d. $\frac{25\pi}{18}$

8. (F.TF.1) What is the reference angle for 198°

Answer: _____

- a. 28°
- b. 63°
- c. 72°
- d. 18°**

9. (F.TF.1) Identify a coterminal angle 893° for that is between $0^\circ \leq \theta < 360^\circ$.

Answer: _____

- a. 153°
- b. 163°
- c. 173°**
- d. 183°

10. (F.TF.2) Using the unit circle, find $\sin\left(\frac{3\pi}{4}\right)$.

Answer: _____

- a. $\frac{\sqrt{2}}{2}$
- b. $\frac{\sqrt{3}}{2}$
- c. $-\frac{\sqrt{2}}{2}$
- d. $-\frac{\sqrt{3}}{2}$

11. (F.TF.2) Using the unit circle, find $\cos\left(\frac{11\pi}{6}\right)$.

Answer: _____

- a. $\frac{\sqrt{2}}{2}$
- b. $\frac{\sqrt{3}}{2}$
- c. $-\frac{\sqrt{2}}{2}$
- d. $-\frac{\sqrt{3}}{2}$

12. (F.TF.2) Using the unit circle, find $\tan\left(\frac{2\pi}{3}\right)$.

Answer: _____

- a. $\frac{\sqrt{3}}{3}$
- b. $-\frac{\sqrt{3}}{3}$
- c. $\sqrt{3}$
- d. $-\sqrt{3}$

13. (F.TF.2) What is the reference angle for 315° ?

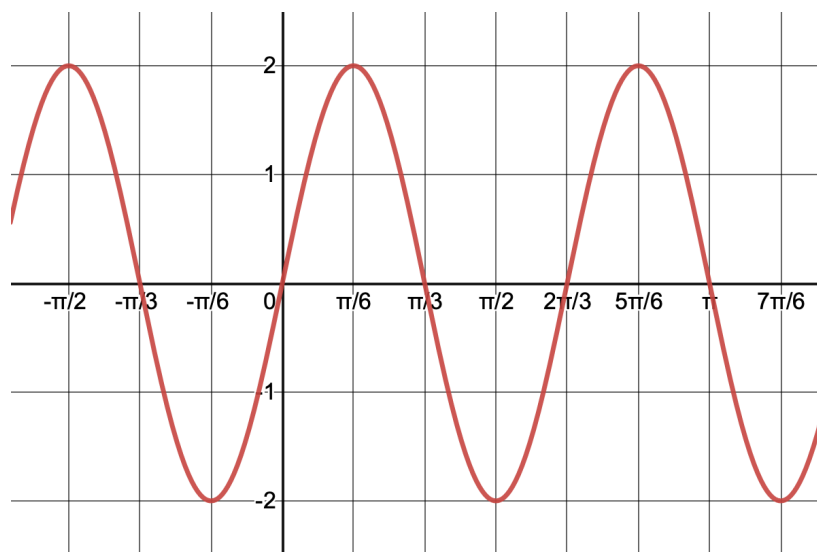
Answer: _____

- a. 15°
- b. 30°
- c. 45°
- d. 60°

14. (F.TF.5) Which function best fits the graph below

Answer: _____

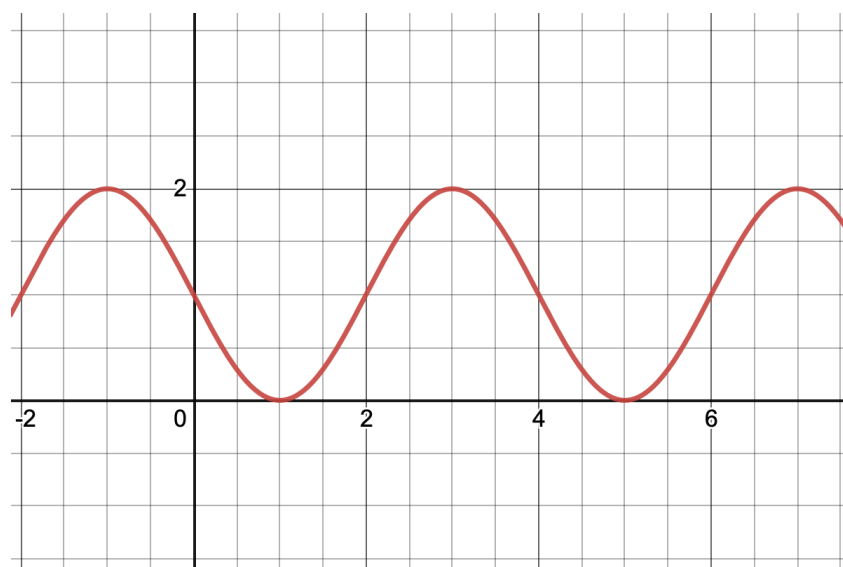
- a. $y = -2\sin(3\pi x)$
- b. $y = 2\sin(3x)$**
- c. $y = 2\sin(3\pi x)$
- d. $y = -2\sin(3x)$



15. (F.TF.5) Which function best fits the graph below

Answer: _____

- a. $y = -\sin\left(\frac{\pi}{2}x\right) + 1$**
- b. $y = -2\sin(4x) + 1$
- c. $y = -\sin(4x) + 1$
- d. $y = -2\sin\left(\frac{\pi}{2}x\right) + 1$



Conceptual Problems – 8 points each, 40 points total (DOK3)

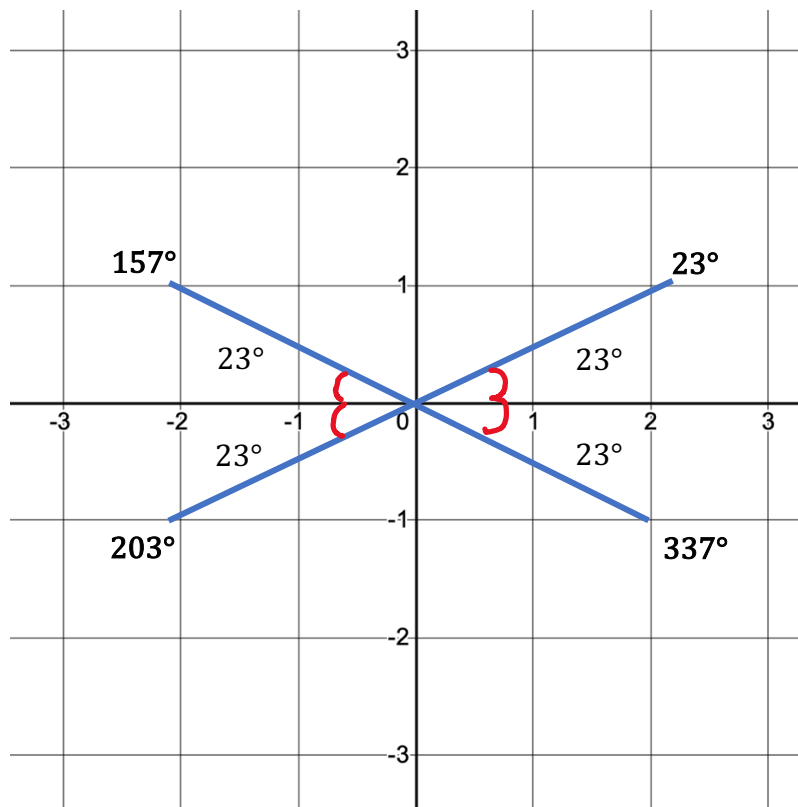
16. (F.TF.1) Find the reference angle for -450° . Show your work for each step.

$$-490^\circ + 360^\circ = -130^\circ + 360^\circ = 230^\circ$$

230° is in Quadrant II, so Reference Angle = $\theta - 180^\circ$

$$230^\circ - 180^\circ = 50^\circ$$

17. (F.TF.1) Calculate all four angles between 0° and 360° that have a reference angle of 23° . Use the coordinate plane below to draw those angles.



18. (F.TF.2) Arrange the trigonometric ratios below in order from least to greatest. Be sure to base your order on the value of each ratio, not the value of the angle.

$$\sin(0), \cos\left(\frac{2\pi}{3}\right), \tan\left(\frac{\pi}{3}\right), \cos\left(\frac{11\pi}{6}\right), \sin(\pi)$$

1. $\sin(\pi) = -1$
2. $\cos\left(\frac{2\pi}{3}\right) = -\frac{1}{2}$
3. $\sin(0) = 0$
4. $\cos\left(\frac{11\pi}{6}\right) = \frac{\sqrt{3}}{2}$
5. $\tan\left(\frac{\pi}{3}\right) = \sqrt{3}$

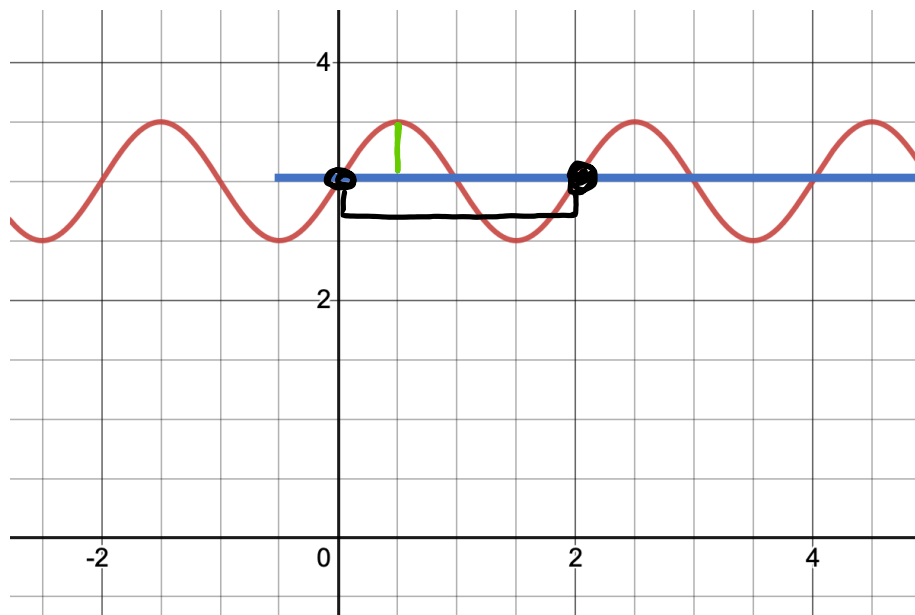
19. (F.TF.5) Explain how to find the midline, period, and amplitude of a Ferris wheel without looking at its graph.

Midline – the horizontal line going through the center of the wheel

Period – how long it takes to ride the Ferris wheel all the way around one time

Amplitude – the distance from the center of the wheel to the top, aka the radius

20. (F.IF.7e) Draw and label the midline, period, and amplitude of the sine function below. Then, write an equation that represents that function.



Midline (blue line) - $y=3$

Amplitude (green line) = 0.5

Period (black line) = 2

$$a = 0.5$$

$$b = \frac{2\pi}{\text{period}} = \frac{2\pi}{2} = \pi$$

$$k = 3$$

$$y = 0.5\sin(\pi x) + 3$$