

C12 - 5.0 - Trig Graphing Review

Graph. Find the Horizontal Center-Line/Vertical Displacement, Amplitude, Max/Min Points and Phase Shift and Period & Graph and state the Domain and Range:

1) In Radians

- a) $y = \sin\theta$
- b) $y = \cos\theta$
- c) $y = \tan\theta$
- d) $y = \csc\theta$
- e) $y = \sec\theta$
- f) $y = \cot\theta$

2) In degrees.

- a) $y = 2\sin\theta$
- b) $y = \cos(2\theta)$
- c) $y = \sin 2\theta + 1$
- d) $y = \cos(\theta - 90^\circ)$
- e) $y = \tan\theta + 1$

3) In radians.

- a) $y = -\cos\theta - 1$
- b) $y = 2\sin\left(\theta + \frac{\pi}{3}\right)$
- c) $y = 2\tan\left(\frac{1}{2}\theta\right)$

4) In degrees

- a) $y = -2\sin(2(\theta - 60^\circ)) + 4$
- b) $y = \frac{1}{2}\cos\left(\frac{1}{2}\theta - 360^\circ\right) - 2$

5) In radians.

- a) $y = 2\sin\left(2\theta + \frac{\pi}{2}\right) + 1$
- b) $y = 2\csc\left(2\theta + \frac{\pi}{2}\right) + 1$
- c) $y = -3\cos\left(\pi\theta - \frac{1}{2}\right)$
- d) $y = 2\tan\left(\theta + \frac{\pi}{2}\right) + 2$

6) Find the range of :

$$y = a\cos x + d; a > 0, d > 0.$$

$$y = a\sin(b(x - h)) + k.$$

7) Find another function equal to: $y = \sin(\theta - \pi)$

8) Find the Equation in Positive and Negative Sin and Cosine with:

A maximum at (4,18) and a minimum at (9,6).

A maximum at (-2,4) and a minimum at (6, -2).

A maximum at $\left(-\frac{\pi}{3}, 4\right)$ and a minimum at $\left(\frac{\pi}{6}, -2\right)$.

A maximum at $(-\pi, 4)$ and a minimum at $\left(\frac{3\pi}{2}, -2\right)$.

9) Tide depth in meters vs time in hours after

$$\text{midnight: } d = +5\cos\left(\frac{\pi}{4.8}(x - 2)\right) + 11$$

On your graphing calculator: Find Max/Min Tide heights and times in a 24 hour cycle, period, height at 8:30 am, 1:00 pm and 1:24 pm, 8 am tomorrow and # of hours in a 24 hour cycle with depth greater than 9 m to swim.

10) A Ferris wheel with diameter of 10 m is 1 m off the ground. It takes 16 seconds for one complete revolution. Draw a diagram of the Ferris wheel, graph the height of a passenger starting at the bottom and write a sinusoidal equation. With and w/out a Calculator: How high 6 at seconds and how long above 6m in one cycle?

11) High tide depth 18m at 8 am. Low tide depth 8 m at 1:24 pm. Graph and find equation. What is the first time after 8am the tide is 14m. How long in one cycle is the tide above 14m.

12) A Bike Pedal Gear with radius 0.10 m is 12 cm off the ground. The pedal spins 2 revolution per minute. Draw a diagram of the Gear, graph the height of a gear starting at the bottom and write a sinusoidal equation. With a Calculator: How high 32 at seconds and how long above 18 cm in one cycle?

13) A mass is attached to a spring so that the rest height is 50 centimeters above the ground. The mass is pulled down 20 centimeters from the rest position and released at time equals zero. It takes 0.4 seconds for the mass to return to its lower position. Assuming simple harmonic motion, find an equation that describes the position of the mass and related to the ground. **With a Calculator: How high 3 at seconds and how long above 58 cm in one cycle?**

14) In Vancouver, the earliest time of sunrise is at 5:00 AM on June 21st, the 173rd day of the year, and the latest time of sunrise is at 8:00 PM on December 21st. 365 day year. Find a sinusoidally equation. Find the time of sunrise on February 14th, the 45th day of the year. How many days a year is sunrise before 7:00 AM?

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15) Find the Equation in Positive and Negative Sin and Cosine with Smallest Phase Shift .

