PC – Trig Name _____

Review – Graphing and all that jazz

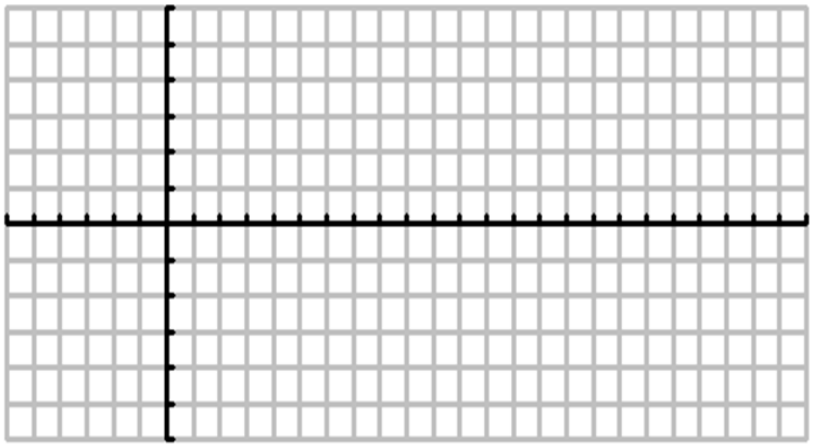
For #'s 1-10, use the attached graphing paper to graph at least five points accurately. Show any work necessary.

1. Equation: $y = \sin 3\theta$

Period: _____ Amplitude: _____

Phase shift: _____ Vertical shift: _____

θ	0	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π

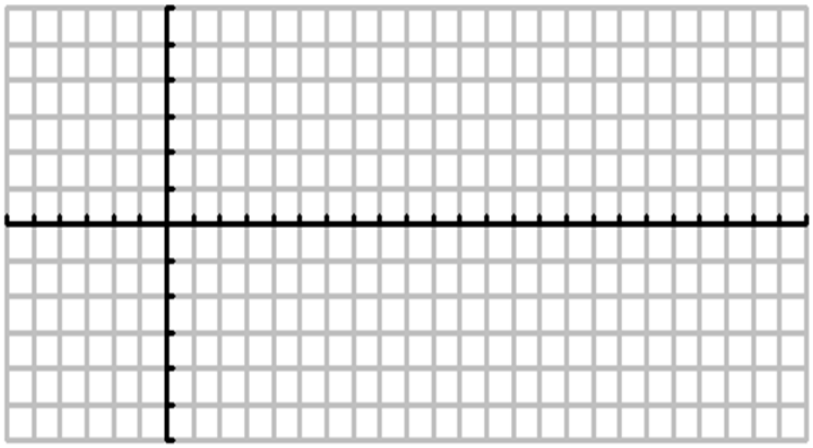


2. Equation: $y = \csc\frac{\theta}{2}$

Period: _____ Amplitude: _____

Phase shift: _____ Vertical shift: _____

θ	0	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π

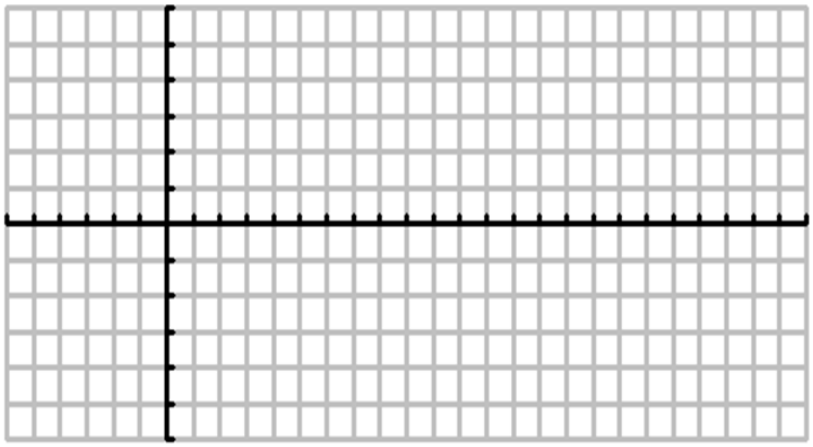


3. Equation: $y = 1 + 3\sin 3\theta$

Period: _____ Amplitude: _____

Phase shift: _____ Vertical shift: _____

θ	0	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π

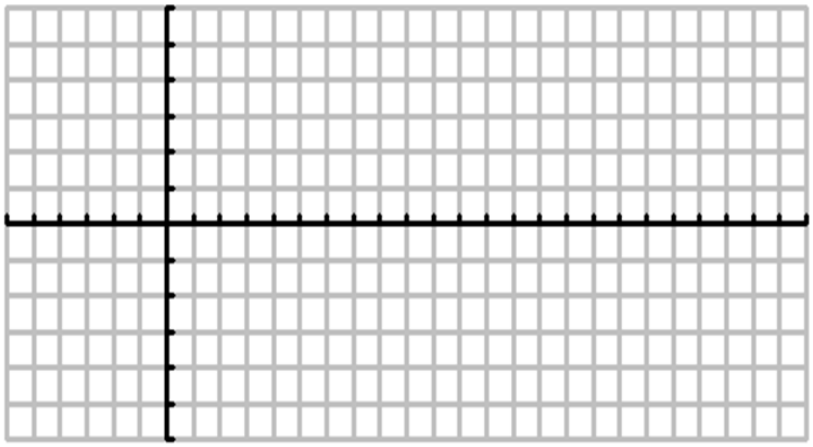


4. Equation $y = 4\tan\theta$

Period: _____ Amplitude: _____

Phase shift: _____ Vertical shift: _____

θ	0	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π

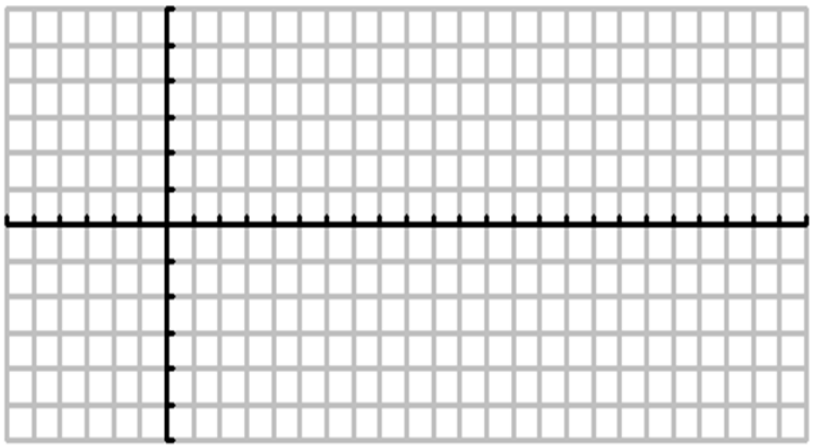


5. Equation: $y = 3\cot\left(\theta + \frac{5\pi}{6}\right)$

Period: _____ Amplitude: _____

Phase shift: _____ Vertical shift: _____

θ	0	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π

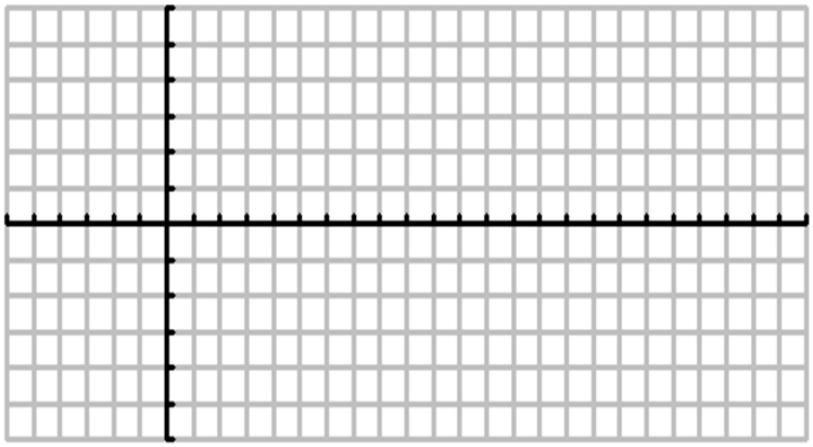


6. Equation: $y = \frac{1}{2}\tan\left(\theta + \frac{7\pi}{4}\right) - 2$

Period: _____ Amplitude: _____

Phase shift: _____ Vertical shift: _____

θ	0	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π

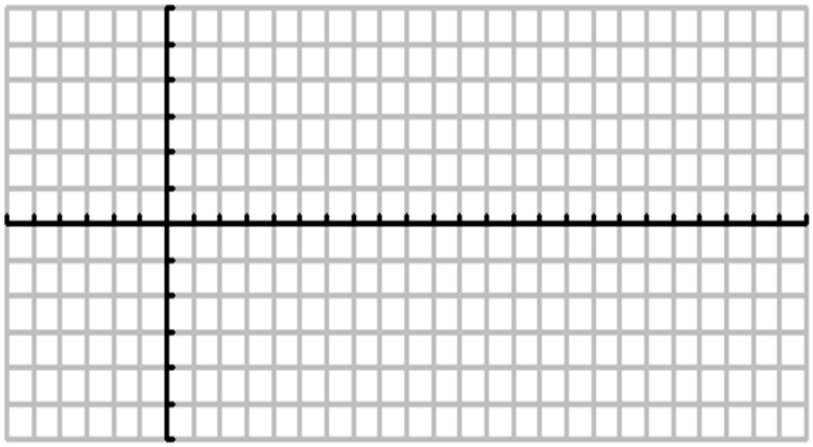


7. Equation: $y = 2\sec\left(\theta - \frac{\pi}{4}\right) + 1$

Period: _____ Amplitude: _____

Phase shift: _____ Vertical shift: _____

θ	0	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π

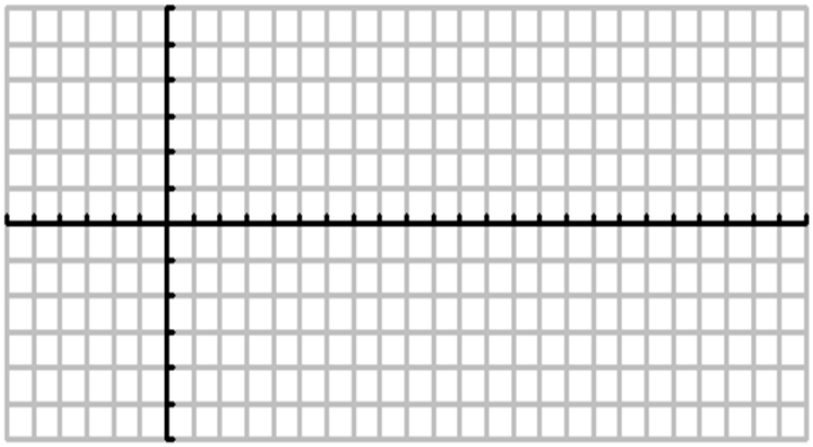


8. Equation $y = \csc\left(\frac{\theta}{2} - \frac{2\pi}{3}\right)$

Period: _____ Amplitude: _____

Phase shift: _____ Vertical shift: _____

θ	0	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π

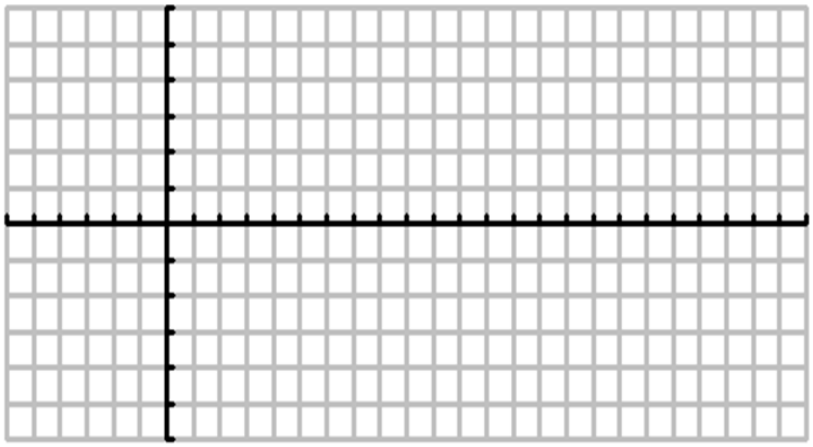


9. Equation: $y = 4\sin\left(3\theta + \frac{5\pi}{3}\right) + 2$

Period: _____ Amplitude: _____

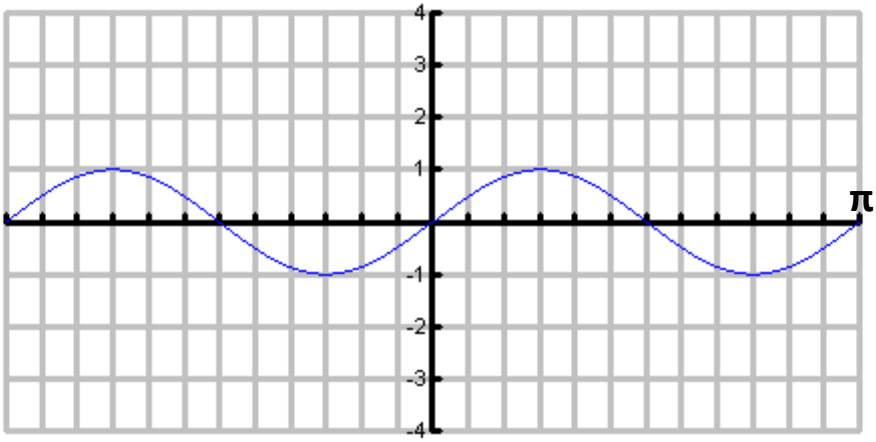
Phase shift: _____ Vertical shift: _____

θ	0	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π



For #'s 10-15, find the equation that best fits the trigonometric graph.

10.



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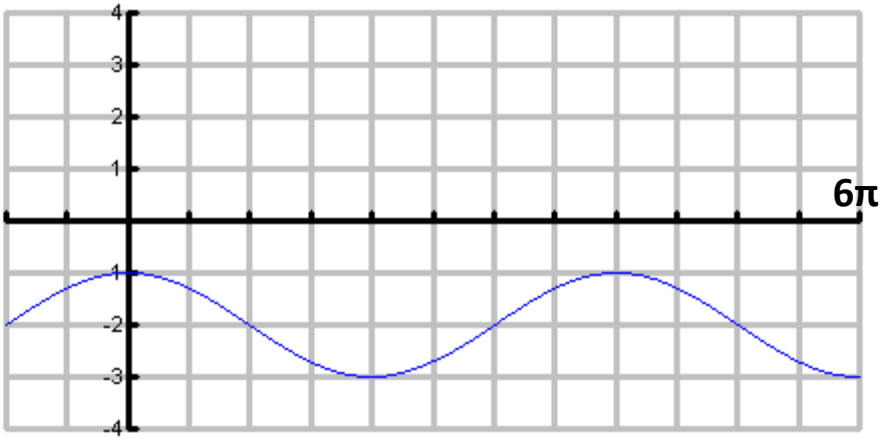

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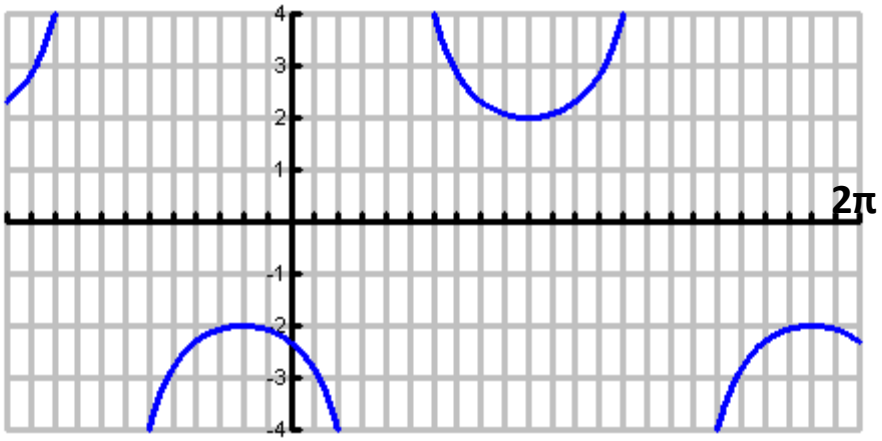

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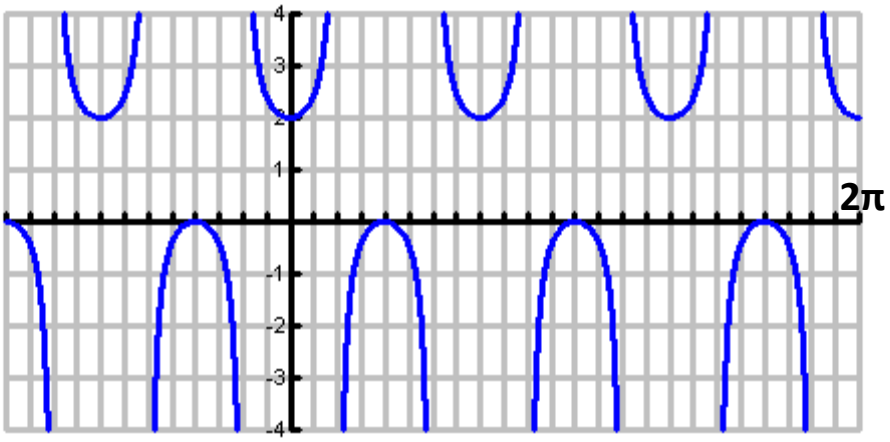

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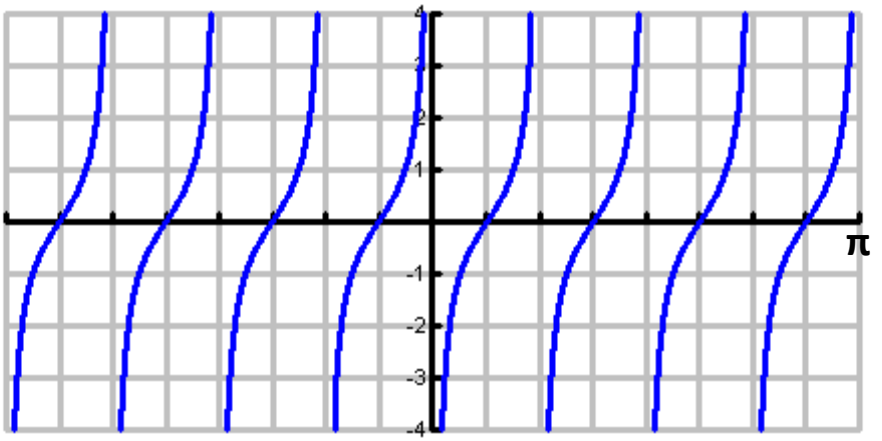
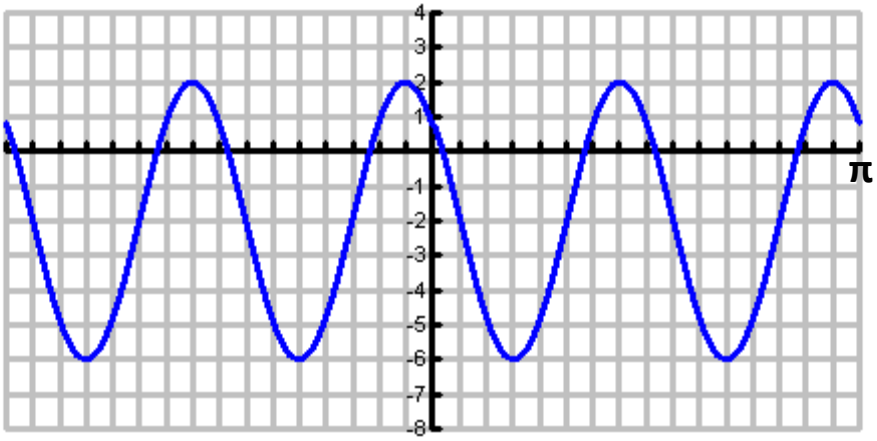


15.



For #'s 16-19, write an equation for the given situation.

16. A Porsche 911 is traveling at a speed of 65 mph. Its tires have an outside diameter of 25.086 inches. Find an equation that would represent a nail stuck in the tire for time "t" in minutes. (Hint: The nail is picked up from the ground and your "b" value needs to be in radians/minute)

17. A water wheel has a 10 ft radius and the center of the wheel is 11 ft off the water surface. The rate of the river makes the water wheel travel at 14 revolutions per minute. Write an equation that would represent the water as it is first picked up from the river and travels around the water wheel.

18. The Earth is 93,000,000 miles from the sun and traverses its orbit, which is nearly circular, every 365.25 days. Write an equation that would represent the distance the Earth travels around the sun over the course of one period.

19. Lance Armstrong won the 1999 Tour de France bicycle race. The wheel of his bicycle had a 58 cm diameter. His overall average speed during the race was 40.273 km/h.

    a. How many revolutions per minute did his wheel travel?

    b. Write a sine equation (at time = 0, height = 0) that would represent the height of a point on the wheel at any time "t."

20. Suppose a Ferris wheel with a diameter of 120 feet makes a complete revolution in 48 seconds. Develop a mathematical model that describes the relationship between the height h of a rider above the bottom of a Ferris wheel (20 feet above the ground) and time t.