Honors Math 2
Unit 9 Review #2

Name Key

Determine the amplitude and period of each function.

1. $y = -2\sin\theta$

amp: 2

period : 2π

2. $y = 3\cos 2\theta$

amp: 3

period : $\frac{2\pi}{2} = \pi$

3. $y = \frac{1}{2}\cos 6\left(\theta + \frac{\pi}{4}\right)$

amp: $\frac{1}{2}$

period: $\frac{2\pi}{6} = \frac{\pi}{3}$

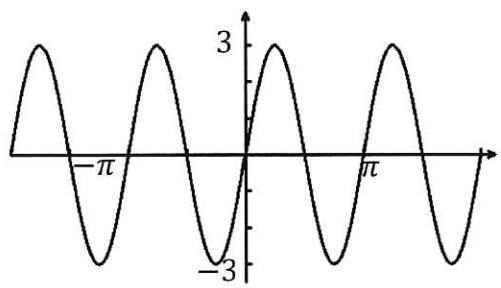
4. $y = 5\sin 2\left(\theta - \frac{\pi}{6}\right)$

amp: 5

period: $\frac{2\pi}{2} = \pi$

Give the amplitude and period of each function graphed below. Then write an equation of each graph.

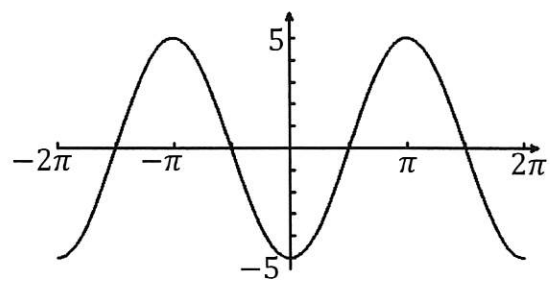
5.



amp: 3
period: π

$y = 3\sin 2\theta$

6.

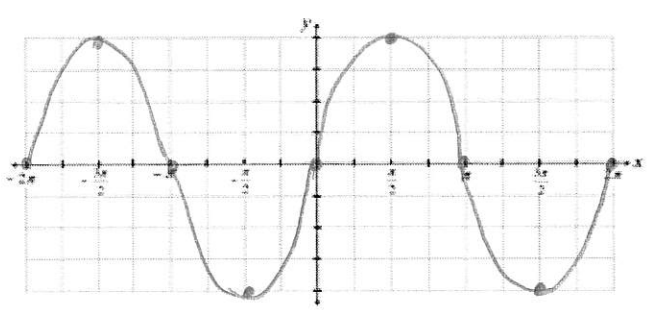


amp: 5
period: 2π
reflect

$y = -5\cos\theta$

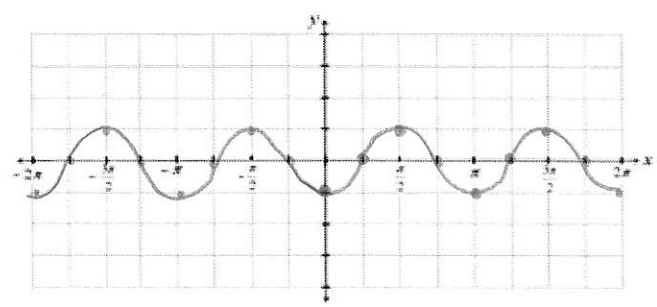
Sketch the graph of the function over the interval $-2\pi \le x \le 2\pi$.

7. $y = 4\sin\theta$



amp: 4
period: 2π
count : $\pi/2$

8. $y = -\cos 2\theta$

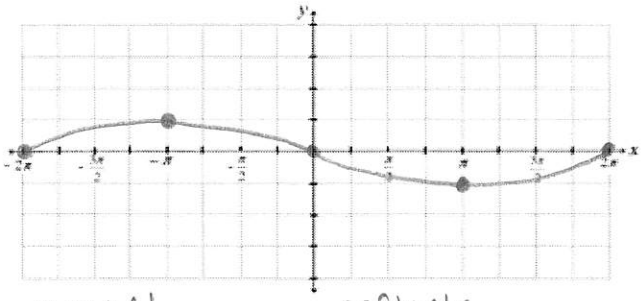


amp: 1
period: $\frac{2\pi}{2} = \pi$

reflects

count: $\pi/4$

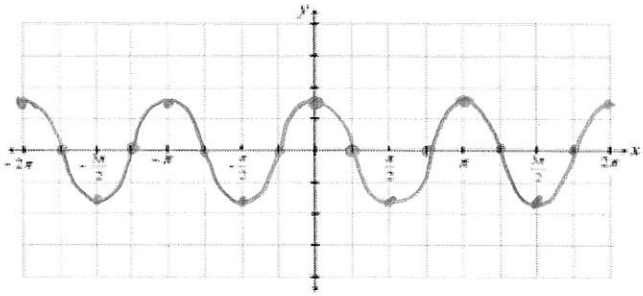
9. $y = -\sin\frac{1}{2}\theta$



amp: 1 reflects

period: $\frac{2\pi}{1/2} = 4\pi$

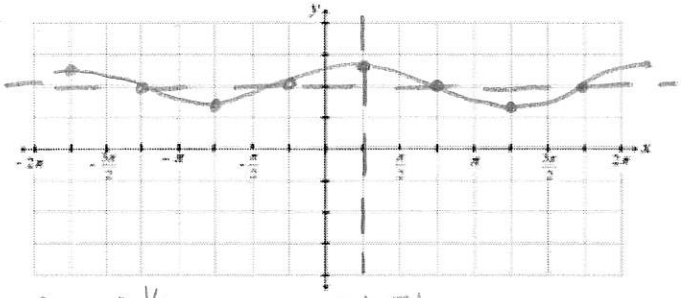
10. $y = \frac{3}{2}\cos 2\theta$



amp: 1.5

period: $\frac{2\pi}{2} = \pi$

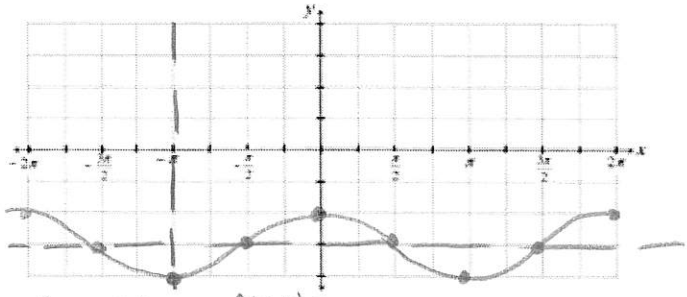
11. $y = \frac{1}{2}\cos\left(\theta - \frac{\pi}{4}\right) + 2$



amp: 1/2 Right $\pi/4$

period: 2π up 2 → midline

12. $y = -\cos(\theta + \pi) - 3$

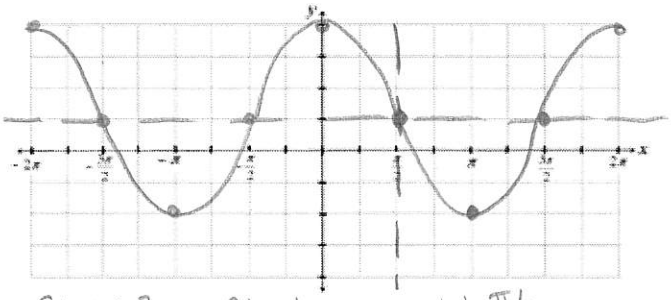


amp: 1 reflects

period: 2π

left π down 3 → midline

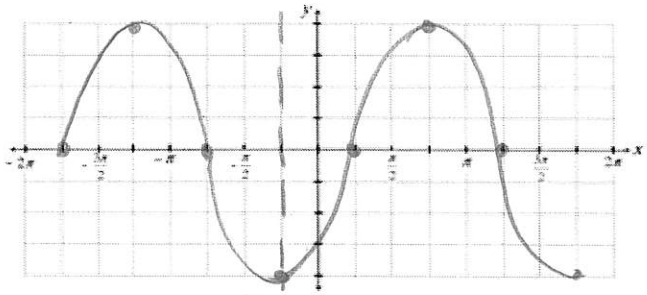
13. $y = -3\sin\left(\theta - \frac{\pi}{2}\right) + 1$



amp: 3 reflects right $\pi/2$

period: 2π up 1 → midline

14. $y = -4\cos\left(\theta + \frac{\pi}{4}\right)$

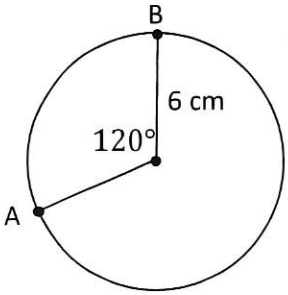


amp: 4 reflects Left $\pi/4$

period: 2π

Find the given arc length.

15. Find the length of arc AB.



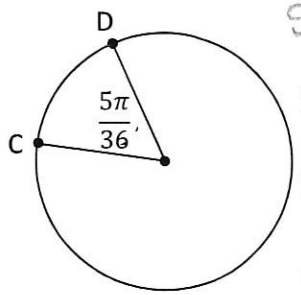
arc length $= \frac{120°}{360°}(2\pi(6))$

$= \frac{1}{3}(12\pi)$

$= 4\pi$ cm

≈ 12.6 cm

16. The diameter is 24 cm.
Find the length of arc CD.



$S = r\theta$

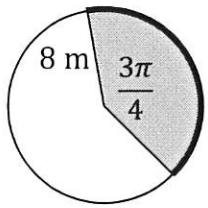
$S = (12)(5\pi/36)$

$S = \frac{5\pi}{3}$

$S \approx 5.2$ cm

Find the area of the sector.

17.

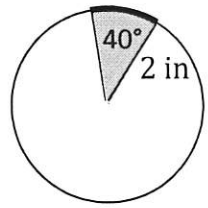


$A = \frac{1}{2} r^2 \theta$

$A = \frac{1}{2}(8)^2(3\pi/4)$

$A = 24\pi \approx 75.4\ m^2$

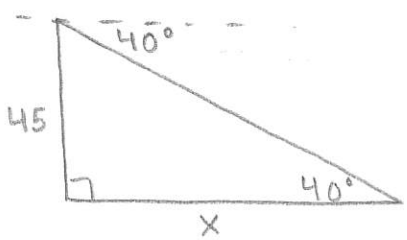
18.



$A = \frac{40°}{360°}(\pi(2)^2)$

$A = \frac{4\pi}{9} \approx 1.4\ in^2$

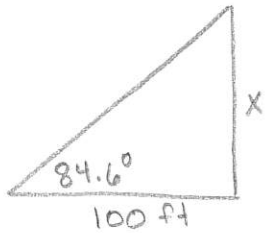
19. From the top of a fire tower, a forest ranger sees his partner on the ground at an **angle of depression** of 40°. If the tower is 45 feet in height, how far is the partner from the base of the tower, to the *nearest tenth of a foot*?



$\tan 40° = \frac{45}{x}$

$x = \frac{45}{\tan 40°} = 53.6\ ft$

20. Devon is standing 100 feet from the Eiffel Tower and sees a bird land on the top of the tower (he has really good eyes!). If the **angle of elevation** from Devon to the top of the Eiffel Tower is close to 84.6°, how tall is the tower?

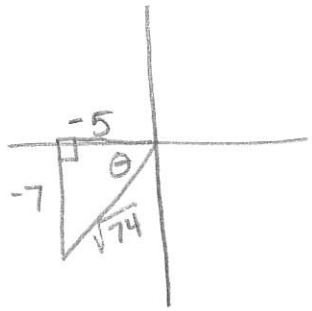


$\tan 84.6° = \frac{x}{100}$

$x = 100 \tan 84.6°$

$x = 1057.9\ ft$

21. Given the ordered pair. Graph and find all six trigonometric functions and find the reference angle. $(-5, -7)$



reference angle

$\tan\theta = \frac{-7}{-5} = \frac{7}{5}$

$\tan^{-1}(7/5) = \theta$

$\theta = 54.4°$

$\sin\theta = \frac{-7}{\sqrt{74}} = \frac{-7\sqrt{74}}{74}$ $\csc\theta = \frac{-\sqrt{74}}{7}$

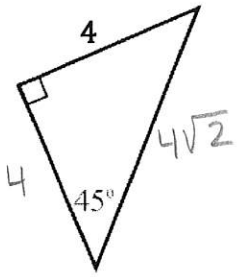
$\cos\theta = \frac{-5}{\sqrt{74}} = \frac{-5\sqrt{74}}{74}$ $\sec\theta = \frac{-\sqrt{74}}{5}$

$\tan\theta = \frac{7}{5}$ $\cot\theta = \frac{5}{7}$

No Calculator Section.

Find the missing sides of the triangles.

1.



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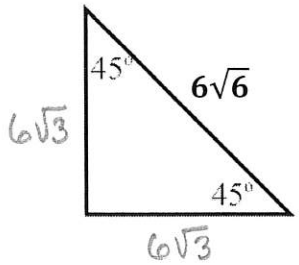

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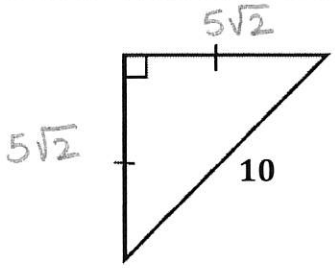

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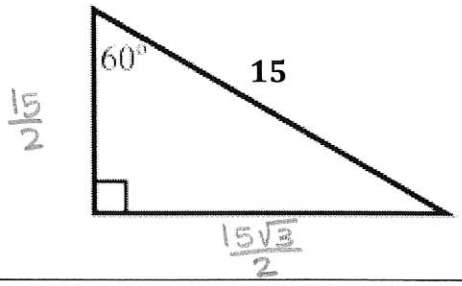

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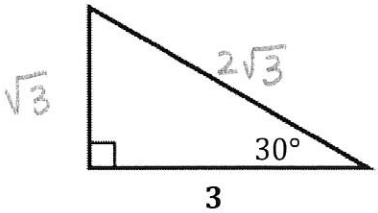

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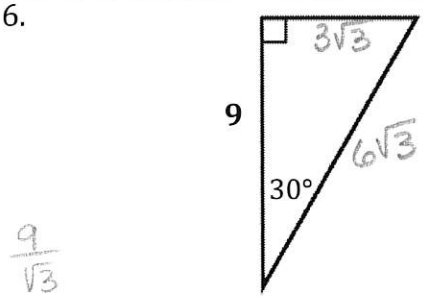

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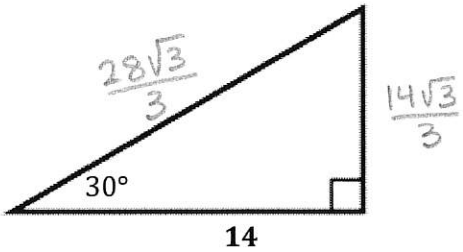

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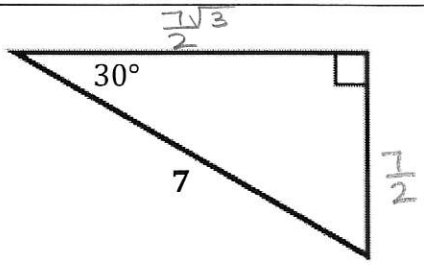
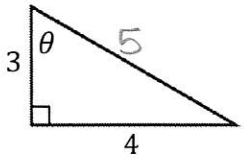


Find the value of the trig function indicated.

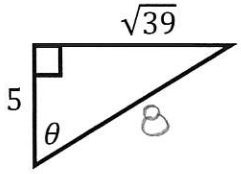
9. ***sin θ***

$\frac{4}{5}$



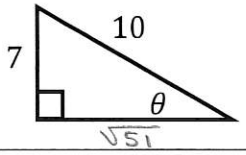
10. ***cos θ***

$\frac{5}{8}$



11. ***tan θ***

$\frac{7}{\sqrt{51}} = \frac{7\sqrt{51}}{51}$



12. ***sec θ***

$\frac{\sqrt{5}}{2}$