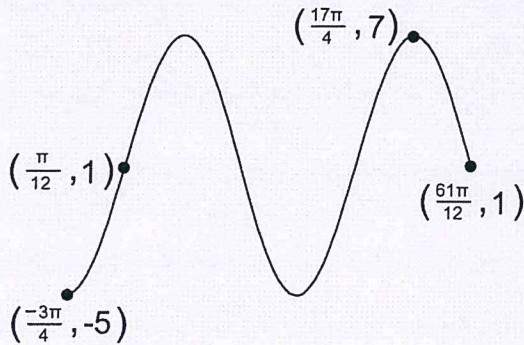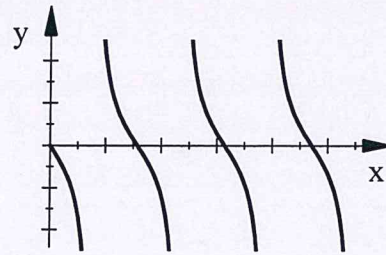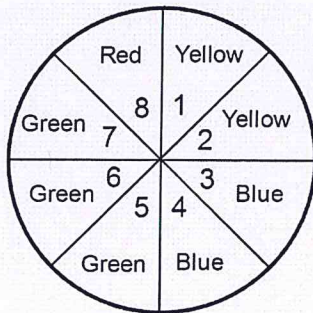1. Write BOTH a Sine and Cosine equation for this graph.

2. Write a Tangent equation for this graph. The window shown is 0 to 11π

$\left(\frac{17\pi}{4}, 7\right)$

$\left(\frac{\pi}{12}, 1\right)$

$\left(\frac{61\pi}{12}, 1\right)$

$\left(\frac{-3\pi}{4}, -5\right)$

3. You'll spin this spinner once. Find each probability as a fraction without reducing.

Red | Yellow
8 | 1
Green 7 | 2 Yellow
6 | 3
Green 5 | 4 Blue
Green | Blue

a. P(Factor of 60 and Green)   b. P(prime number or blue)

4. The probability that I laugh during the movie is $\frac{6}{17}$. The probability that I cry during the movie is $\frac{3}{10}$. Find the following probability as a percent to the nearest hundredth.
P(laugh or cry during the movie)=

5. Forty percent of the people in a large survey claim that they have seen a ghost. You pick 8 random people from the survey. Find the following probability as a percent rounded to the nearest hundredth.
P(at least 6 say they've seen a ghost) =

6. You want to make a dessert plate for a party. You have the following to choose from: 8 kinds of cookie, 6 kinds of pie, and 5 kinds of pudding.
a. How many different plates are possible if you put 3 of each on the plate?

b. Another plate can hold only 5 items. How different plates are possible if you fill it with only one kind of dessert?

7. You need to create an new access code for your credit card. This code must be 7 characters long. Four of them must be a digit from 0 to 9 and the rest must be a letter. The code is not case-sensitive. Find the number of possible codes if:
a. Only letters can repeat.   b. Nothing can repeat.

1

8. The coach needs to decide on who will play the following positions on the softball team? Catcher, Pitcher, and First Base. There are 7 players to choose from. How many ways can the coach fill these positions?

9. In the box are the following crayons: 8 Green, 9 Blue, and 6 Red. You randomly grab a crayon and color with it until it becomes too short then your randomly grab another one, etc. Find each probability as a fraction without reducing.

a) P(Blue and Red and Green)   b) P(Green and Green and Green)

10. Use the survey results shown below. Find each probability as a fraction without reducing.

	Pick-up	Compact	SUV	Luxury	Total
GM	108	57	92	63	320
Ford	123	29	79	102	333
Total	231	86	171	165	653

a) P(GM or SUV)   b) P(Compact and Ford)

c) P(Luxury | GM)   d) P(Ford | Pick-up)

11. Find the EXACT value of each. Simplify and rationalize when possible.

a) $\operatorname{Sec} \dfrac{19\pi}{6}$ b) $\operatorname{Cot}(-780°)$ c) $\operatorname{Csc} \dfrac{-27\pi}{4}$ d) $\operatorname{Cos}(-1470°)$

12. Find each to the nearest hundredth.

a) $\operatorname{Cot}\left(\dfrac{-45\pi}{13}\right)$ b) $\operatorname{Csc}(427°)$ c) $\operatorname{Sec} \dfrac{\pi}{9}$

2

ANSWERS

①

$(\frac{\pi}{12}, 1)$

$(\frac{-3\pi}{4}, -5)$
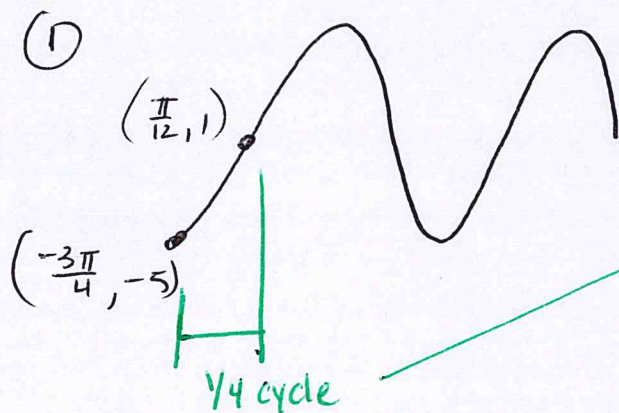
¼ cycle

Amplitude = $1 - -5 = 6$

midline: $y = 1$

period = $\dfrac{\frac{\pi}{12} - \frac{-3\pi}{4}}{\frac{1}{4}}$ = $\left(\frac{\pi}{12} + \frac{9\pi}{12}\right) 4$

= $\frac{10\pi}{12} \cdot 4 = \frac{10\pi}{3}$

$b = \dfrac{2\pi}{\frac{10\pi}{3}} = 2\pi \cdot \frac{3}{10\pi} = 3/5$

__Sine EQ:__   START AT $(\pi/12, 1)$ $y = 6\sin\left(\frac{3}{5}(x - \frac{\pi}{12})\right) + 1$

__Cosine EQ__   START AT $(\frac{-3\pi}{4}, -5)$ $y = -6\cos\left(\frac{3}{5}(x + \frac{3\pi}{4})\right) + 1$

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② 0 TO 11π contains 3½ cycles   period = $\dfrac{11\pi}{3\frac{1}{2}} = \dfrac{11\pi}{\frac{7}{2}}$

- Graph is upside down

- $b = 7/22$

$y = -\tan\frac{7x}{22}$

= $11\pi \cdot \frac{2}{7} = \frac{22\pi}{7}$

$b = \dfrac{\pi}{\frac{22\pi}{7}} = \pi \cdot \frac{7}{22\pi} = \frac{7}{22}$

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③ a) $\frac{2}{8}$ b) $\frac{5}{8}$

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④ $\frac{6}{17} + \frac{3}{10} - \frac{6}{17} \cdot \frac{3}{10}$ = 54.71%

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⑤ $P(6) = {}_8C_6 (.40)^6 (.60)^2 \Rightarrow 4.13\%$

$+$

$P(7) = {}_8C_7 (.40)^7 (.60)^1 \Rightarrow 0.79\%$

$+ P(8) = {}_8C_8 (.40)^8 \Rightarrow 0.07\%$

4.99%

⑥

a) 3 cookies AND 3 pies AND 3 puddings

$$= {}_8C_3 \cdot {}_6C_3 \cdot {}_5C_3$$

$$= 56 \cdot 20 \cdot 10 = \boxed{11,200}$$

b)

5 cookies OR 5 pies OR 5 puddings

$$= {}_8C_5 + {}_6C_5 + {}_5C_5$$

$$= 56 + 6 + 1 = \boxed{63}$$

⑦ a) $\dfrac{\underline{10} \cdot \underline{9} \cdot \underline{8} \cdot \underline{7}}{\#'s} \cdot \dfrac{\underline{26} \cdot \underline{26} \cdot \underline{26}}{\text{Letter}} = \boxed{88,583,040}$

b) $\dfrac{\underline{10} \cdot \underline{9} \cdot \underline{8} \cdot \underline{7}}{\#'s} \cdot \dfrac{\underline{26} \cdot \underline{25} \cdot \underline{24}}{\text{Letter}} = \boxed{78,624,000}$

⑧ ${}_7P_3 = \boxed{210}$

⑨ a) $\dfrac{9}{23} \cdot \dfrac{6}{22} \cdot \dfrac{8}{21}$

$$= \boxed{\dfrac{432}{10,626}}$$

b) $\dfrac{8}{23} \cdot \dfrac{7}{22} \cdot \dfrac{6}{21}$

$$= \boxed{\dfrac{336}{10,626}}$$

(10) a) $\dfrac{399}{653}$ b) $\dfrac{29}{653}$ c) $\dfrac{63}{320}$ d) $\dfrac{123}{231}$

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(11) a) $\dfrac{1}{-\sqrt{3}/2} = -\dfrac{2}{\sqrt{3}} \cdot \dfrac{\sqrt{3}}{\sqrt{3}} = \boxed{\dfrac{-2\sqrt{3}}{3}}$

b) $COT = \dfrac{X}{Y} = \dfrac{\frac{1}{2}}{-\frac{\sqrt{3}}{2}} = \dfrac{1}{2} \cdot \dfrac{-2}{\sqrt{3}} = -\dfrac{1}{\sqrt{3}} \cdot \dfrac{\sqrt{3}}{\sqrt{3}} = \boxed{\dfrac{-\sqrt{3}}{3}}$

c) $\dfrac{1}{-\sqrt{2}/2} = -\dfrac{2}{\sqrt{2}} \cdot \dfrac{\sqrt{2}}{\sqrt{2}} = -\dfrac{2\sqrt{2}}{2} = \boxed{-\sqrt{2}}$

d) $\boxed{\dfrac{\sqrt{3}}{2}}$

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(12) a) -0.12

b) 1.09

c) 1.06