Honors Math 3 #20, 22, 52 Name Yost

Quarter 2 Review

Simplify each expression.

1) $(a+4)\cdot\dfrac{7a-9}{49a-63}$

$\dfrac{a+4}{7}$

2) $\dfrac{1}{p+3}\cdot\dfrac{6-p-7p^2}{7p-6}$

$-\dfrac{p+1}{p+3}$

3) $\dfrac{12v-4}{3v-1}\div 10v$

$\dfrac{2}{5v}$

4) $\dfrac{n+3}{4}\div\dfrac{6n-24}{4}$

$\dfrac{n+3}{6(n-4)}$

Solve each equation. Remember to check for extraneous solutions.

5) $\dfrac{1}{6}=\dfrac{1}{6x}+\dfrac{x+6}{18x}$

$x=9/2$

6) $\dfrac{a^2-4a+3}{2a+6}-\dfrac{a-4}{2}=\dfrac{1}{2}$

$a=3$

7) $\dfrac{v-3}{v^3-4v^2}+\dfrac{v^2+2v-15}{v^3-4v^2}=\dfrac{3}{v}$

$V=6$ or $3/2$

8) $\dfrac{5}{2b^2+6b}+\dfrac{b-1}{2b+6}=\dfrac{b^2+b-12}{2b^2+6b}$

$b=\dfrac{17}{2}$

Simplify each expression.

9) $\frac{2n}{3n} + \frac{4}{6n+12}$

$\frac{2n+6}{3(n+2)}$

10) $\frac{3}{2b} + \frac{b+6}{3b^2+6b}$

$\frac{11b+30}{6b(b+2)}$

11) $\frac{6n}{3n+9} - \frac{6}{3}$

$-\frac{6}{n+3}$

12) $\frac{2x}{3x+3} - \frac{6}{x+1}$

$\frac{2x-18}{3(x+1)}$

13) $\frac{\frac{x+1}{9} + \frac{x+1}{x}}{\frac{2}{x^2} - \frac{9}{2x}}$

$\frac{2x(x^2+10x+9)}{9(4-9x)}$

or

$\frac{2x^3+20x^2+18x}{36-81x}$

14) $\frac{\frac{1}{3} - \frac{15}{x^2}}{\frac{9}{x^2} - \frac{5}{x}}$

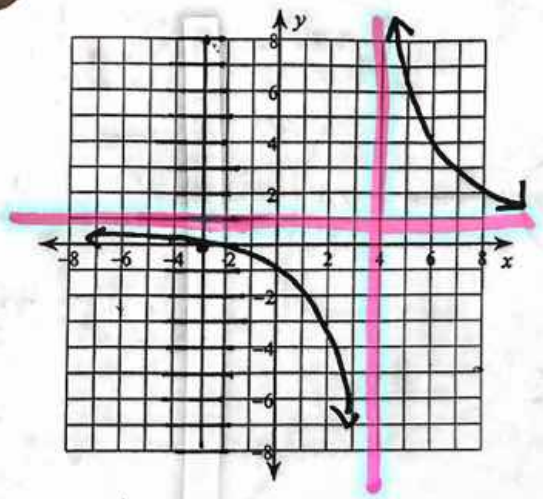
$\frac{x^2-45}{3(9-5x)}$

or

$\frac{x^2-45}{27-15x}$

Identify the holes, vertical asymptotes, x-intercepts, horizontal asymptote, and domain of each. Then sketch the graph.

15) $f(x)=\dfrac{x+3}{x-4}$



domain $\{x \mid x \neq 4\}$

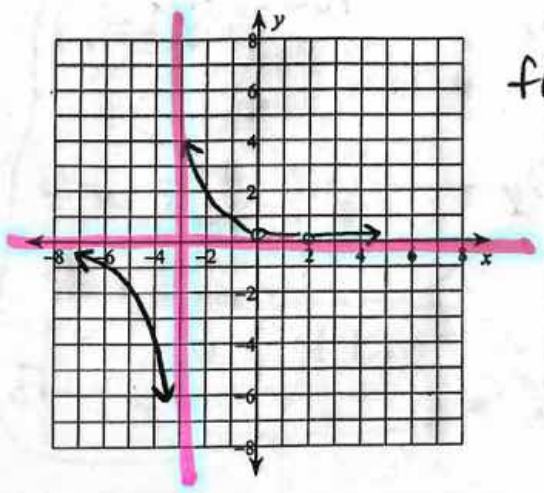
x-int $\{x \mid x = -3\}$

VA $x = 4$

HA $y = 1$

no holes

16) $f(x)=\dfrac{x^2-2x}{x^3+x^2-6x}$ $\quad \dfrac{x(x-2)}{x(x-2)(x+3)}$



$f(x)=\dfrac{1}{x+3}$

domain $\{x \mid x \neq 0, 2, -3\}$

x-int none

VA $x = -3$

HA $y = 0$

holes $(0, \frac{1}{3})(2, \frac{1}{5})$

State if the given angles are coterminal.

17) 30°, 750°

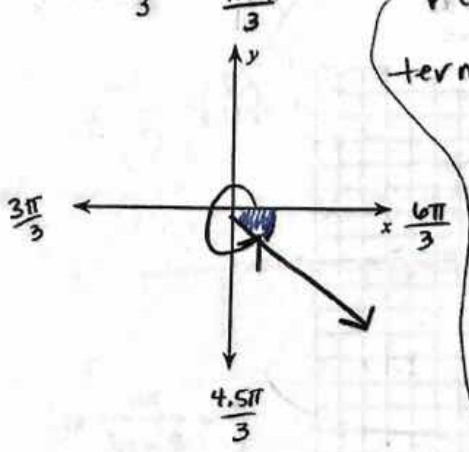
yes

18) 135°, 855°

yes

Draw an angle with the given measure in standard position. State the reference angle, then give the exact value of SIN, COS and TAN.

19) $\frac{5\pi}{3}$



ref ∠ = $\pi/3$

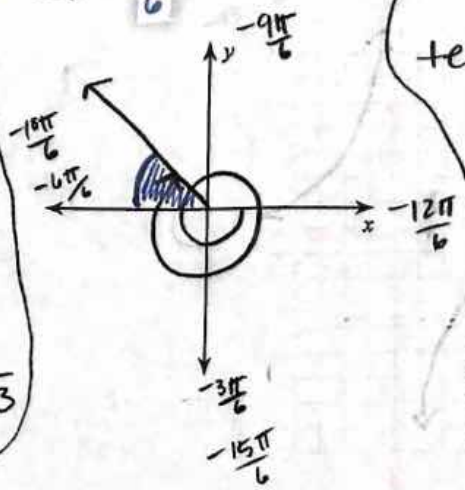
term pt. $(\underset{c}{\frac{1}{2}}, \underset{s}{-\frac{\sqrt{3}}{2}})$

$\sin \frac{5\pi}{3} = -\frac{\sqrt{3}}{2}$

$\cos \frac{5\pi}{3} = \frac{1}{2}$

$\tan \frac{5\pi}{3} = -\sqrt{3}$

★ 20) $-\frac{19\pi}{6}$



ref ∠ = $\pi/6$

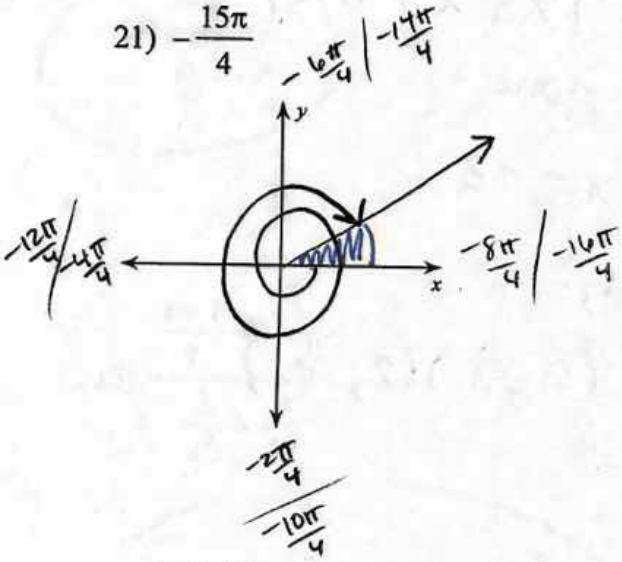
term pt $(\underset{c}{\frac{\sqrt{3}}{2}}, \underset{s}{\frac{1}{2}})$

$\sin \frac{-19\pi}{6} = \frac{1}{2}$

$\cos \frac{-19\pi}{6} = -\frac{\sqrt{3}}{2}$

$\tan \frac{-19\pi}{6} = -\frac{\sqrt{3}}{3}$

21) $-\frac{15\pi}{4}$



ref ∠ = $\pi/4$

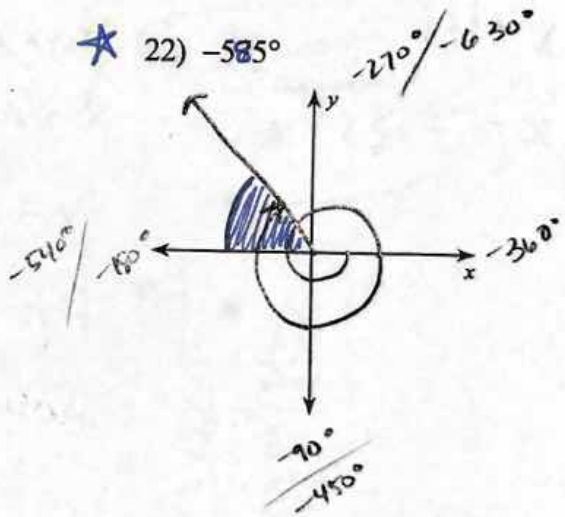
term pt. $(\underset{c}{\frac{\sqrt{2}}{2}}, \underset{s}{\frac{\sqrt{2}}{2}})$

$\sin \frac{-15\pi}{4} = \frac{\sqrt{2}}{2}$

$\cos \frac{-15\pi}{4} = \frac{\sqrt{2}}{2}$

$\tan \frac{-15\pi}{4} = 1$

★ 22) $-585°$



ref ∠ = 45°

term pt = $(\underset{c}{-\frac{\sqrt{2}}{2}}, \underset{s}{\frac{\sqrt{2}}{2}})$

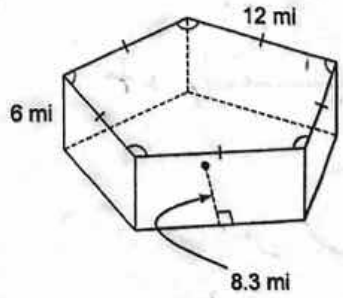
$\sin -585° = \frac{\sqrt{2}}{2}$

$\cos -585° = -\frac{\sqrt{2}}{2}$

$\tan -585° = -1$

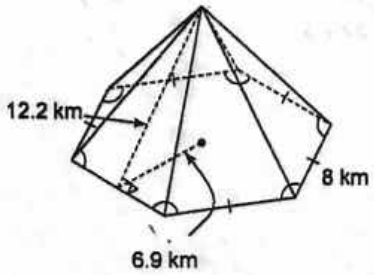
Find the surface area of each figure. Round your answers to the nearest tenth, if necessary. Leave your answers in terms of π for answers that contain π.

23)



858 mi²

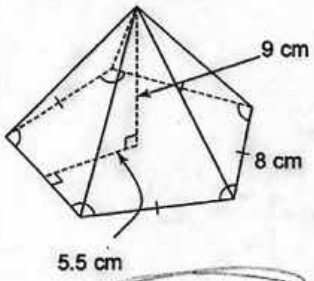
24)



458.4 km²

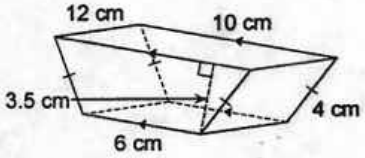
Find the volume of each figure. Round your answers to the nearest tenth, if necessary. Leave your answers in terms of π for answers that contain π.

25)



330 cm³

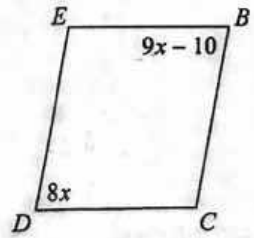
26)



336 cm³

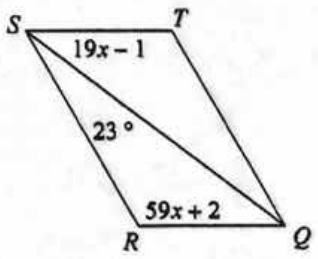
Find the measurement indicated in each parallelogram.

27) Find $m\angle C$



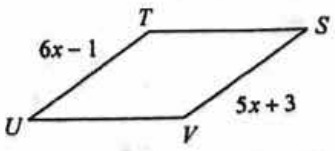
1000

29) Find $m\angle QST$



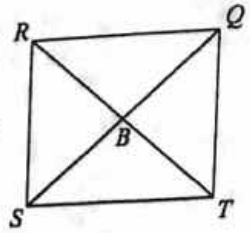
37°

29) Find UT



23

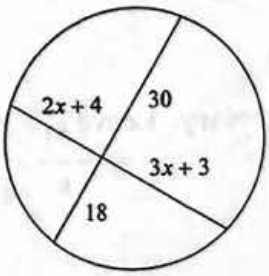
30) $SB = 2x - 17$
$BQ = x - 5$
Find SQ



14

Solve for x. Assume that lines which appear tangent are tangent.

31)



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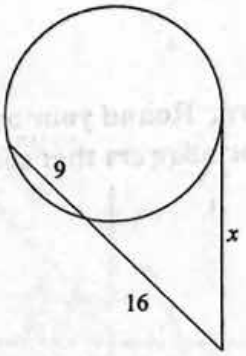
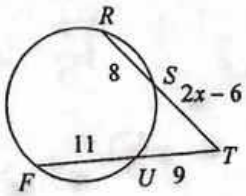
32)



20

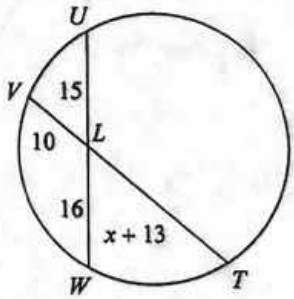
Find the measure of the line segment indicated. Assume that lines which appear tangent are tangent.

33) Find RT



18

34) Find VT



34

35. In Rectangle MATH, AH = $(2x + 5)$ and MT = $(x^2 - 7x - 17)$. What is MT?

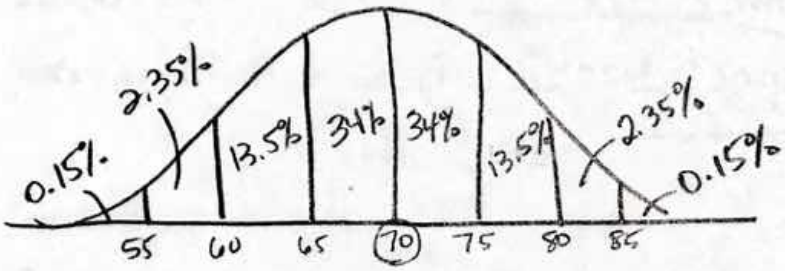
$\overline{MT} = 1$ or 27

36. A survey of 2580 Students out of 4000 found that 9% are left handed. Find the margin of error for the sample and the interval that is likely to contain the true population percent.

MOE = 1.97%

Interval 7.03% – 10.97%

37. 2000 freshmen at NCSU took a math test. The scores were normally distributed with a mean of 70 and a standard deviation of 5.



a. What percent of scores were between 60 and 75?

81.5%

b. Approximately how many students scored between 65 and 70?

680 Students

38. Dr. Muttillo wants to take a survey to find out the opinion of new concussion rules for student athletes. He randomly selects 4 varsity teams from all of the varsity teams at the school and interviews all of the members of these 4 teams. What sampling method did Dr. Muttillo use?

Cluster

39. Is the following a parameter or statistic?

32% of all seniors at LRHS work at a part time job that pays more than minimum wage.

parameter - if population is all seniors at LRHS

40. Out of a sample of 611 shoppers, 479 of them prefer to shop alone.
Find the sample percent, the margin of error, and the interval which you would expect to find the population parameter.

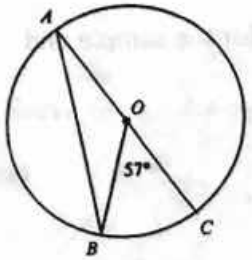
Sample percent 78.4%

MOE 4.05%

Interval

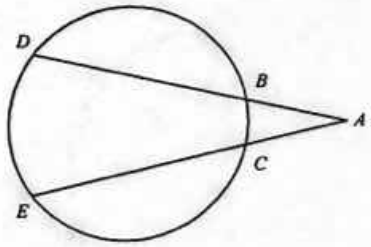
74.35% — 82.45%

41. Find the measure of $\angle BAC$. (The figure is not drawn to scale.)



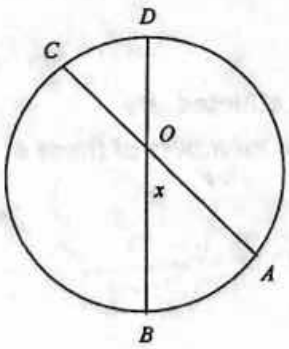
$m\angle BAC = 28.5°$

42. $m\widehat{DE} = 96$ and $m\widehat{BC} = 67$. Find $m\angle A$. (The figure is not drawn to scale.)



$m\angle A = 14.5°$

43. Find the value of x for $m\widehat{AB} = 46$ and $m\widehat{CD} = 25$. (The figure is not drawn to scale.)



$x = 35.5°$

44. Find the center and radius of the circle with equation $x^2 + y^2 + 10x - 4y + 20 = 0$.

center $(-5, 2)$

$r = 3$

45. The radius of a sector is 12 and the measure of the arc is 130°. What is

a) the length of the arc and a) $26\pi/3$

b) the area of the sector b) 52π

46. Find the reference angle for each angle with the given measure.

$88°$ a. 92° $\pi/8$ b. $\frac{7\pi}{8}$

47. Identify the amplitude, period, phase shift, and vertical shift for each function.

a. $y = -2\cos(4x+\pi)+7$ A: 2 P: $\frac{\pi}{2}$ P.S.: L $\pi/4$ Vertical shift: up 7

b. $y = 3\sin(x-\pi)-1$ A: 3 P: 2π P.S.: R π Vertical shift: down 1

48. Graph $y = -2\sin(2x+\pi)+1$

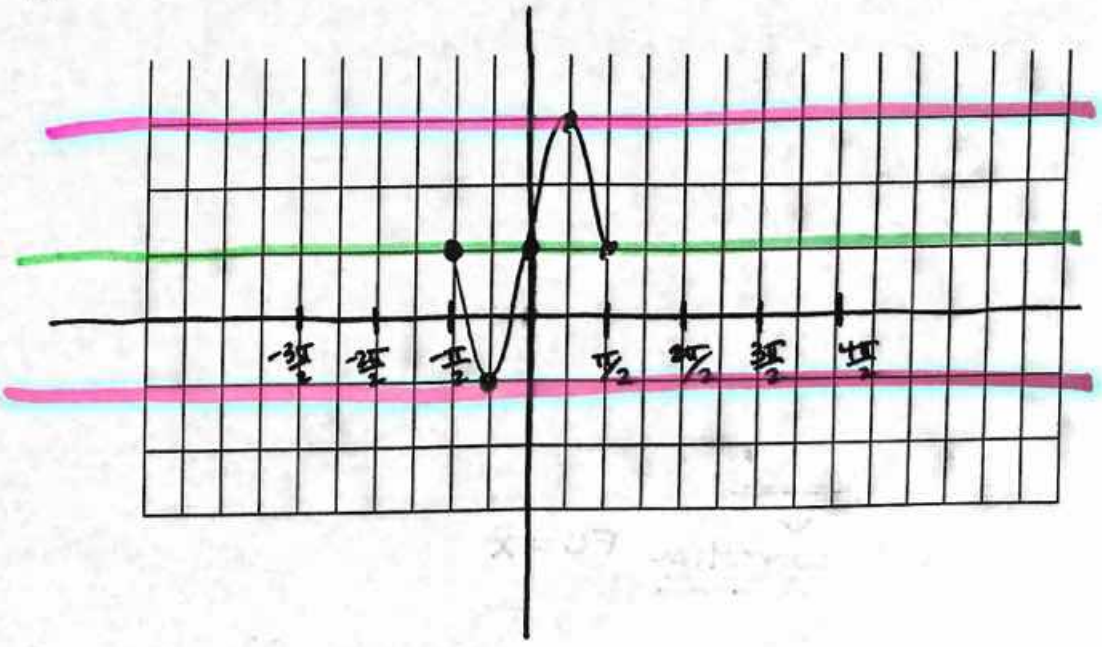
$y = -2\sin 2(x+\frac{\pi}{2})+1$

A: 2

P: π

P.S.: L $\pi/2$

V.S.: up 1



domain	range
$[0, 2\pi]$	$[-1, 1]$
$[0, \pi]$	$[-2, 2]$
$[-\frac{\pi}{2}, \frac{\pi}{2}]$	$[-1, 3]$

$-\frac{\pi}{2}$ $\frac{-\pi}{4}$, 0, $\frac{\pi}{4}$, $\frac{\pi}{2}$

49. Graph $y = 1 + 2\cos(\frac{1}{4}x + \frac{\pi}{2})$

$y = 2\cos\frac{1}{4}(x + 2\pi) + 1$

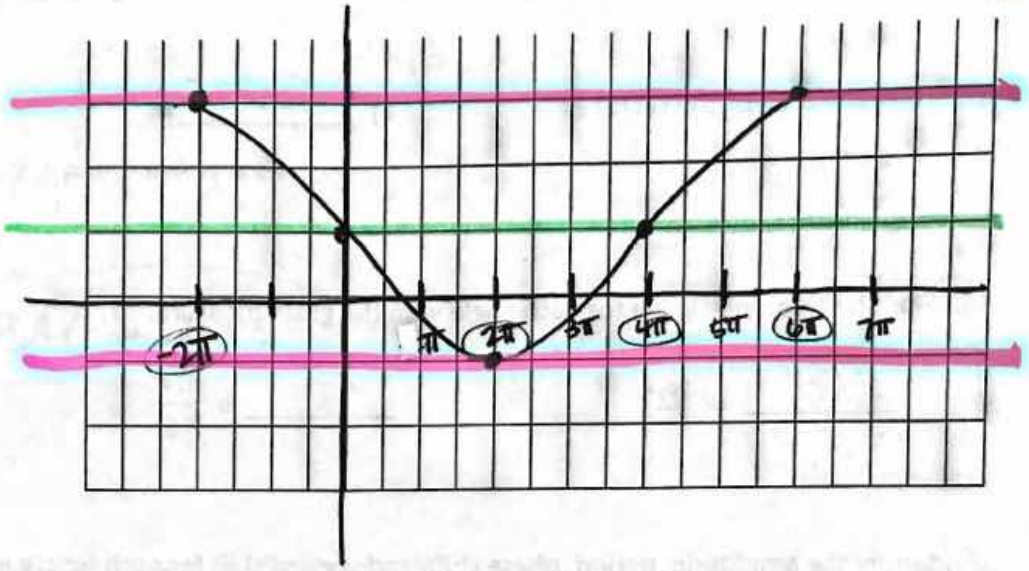
A: 2

P: 8π

P.S.: L 2π

V.S.: up 1

domain	range
$[0, 2\pi]$	$[-1, 1]$
$[0, 8\pi]$	$[-2, 2]$
$[-2\pi, 6\pi]$	$[-1, 3]$

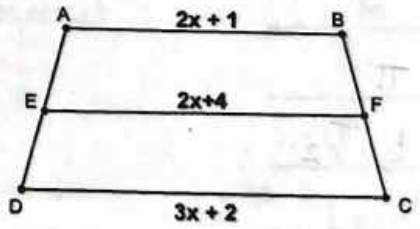


-2π 0 2π 4π 6π

50. In parallelogram SNOW, the diagonals intersect at Y. If YO = 12, WN = 36, and SO = (5x – 26), find the value of x.

$X = 10$

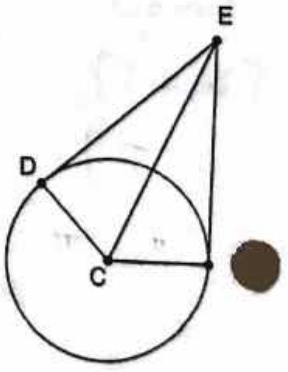
51. Given Trapezoid ABCD with median EF, find the value of x.



$X = 5$

52. Given Circle C, FC = (x^8), EF = (2x + 2), and CE = (x + 8), find DE.

↓ correction FC = x



$DE = 12$