Merissa Cunningham
Date
Period

Assign.-54

3

Packet

Solve

1. $\frac{x+3}{x+5} + \frac{2}{x-9} = \frac{5}{2x+10} \rightarrow \frac{x+3}{x+5} + \frac{2}{x-9} = \frac{5}{2(x+5)}$

C: 4

U: $2(x+5)(x-9)$

LCD: $2(x+5)(x-9)$

$2(x+5)(x-9)\left(\frac{x+3}{x+5}\right) + 2(x+5)(x-9)\left(\frac{2}{x-9}\right) = 2(x+5)(x-9)\left(\frac{5}{2(x+5)}\right)$

$2(x-9)(x+3) + 2(x+5)(2) = 5(x-9)$

$x^2+3x-9x-27$

$2(x^2-6x-27) + 4(x+5) = 5x-45$

$2x^2-12x-54+4x+20 = 5x-45$

$-11 \cdot -2 = 22$

$-11 + -2 = -13$

$x^2, -2x, 11x, 11$

$2x$	$2x^2$	$-2x$
11	$-11x$	11

$2x^2-8x-34 = 5x-45$

$-5x+45 \quad -5x+45$

$2x^2-13x+11 = 0$

$(2x-11)(x-1) = 0$

$2x-11=0 \quad x-1=0$

$\boxed{x=\frac{11}{2},\ x=1}$

Graph:

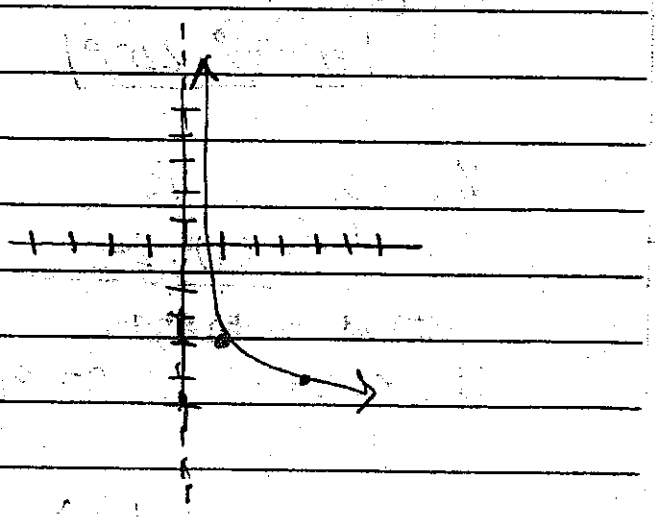
2. $f(x) = -\log_4 x - 3$

$h=0 \quad k=-3$

VA: $x=0$

$(1,0) \rightarrow (1,0) \rightarrow (1,-3)$

$(4,1) \rightarrow (4,-1) \rightarrow (4,-4)$



Solve

3. $\log_5(x^2+7) = \frac{2}{3}\log_5 64$

$x^2+7 = 64^{2/3}$

$x^2+7 = 16$

$-7 \quad -7$

$x^2 = 9$

$x = \pm 3$

$\boxed{x=3 \quad x=-3}$

Find the exact value of the other trig functions

4. $\sin\theta = \frac{3}{4}$

$3^2 + x^2 = 4^2$

$9 + x^2 = 16$

$-9 \quad -9$

$\sqrt{x^2} = \sqrt{7}$

$x = \sqrt{7}$

$\boxed{\cos(\theta) = \frac{\sqrt{7}}{4}}$

$\tan(\theta) = \frac{3}{\sqrt{7}} = \frac{3\sqrt{7}}{7}$

$\boxed{\tan(\theta) = \frac{3\sqrt{7}}{7}}$

Find in Radians

5. $\sin(\theta) = \frac{-\sqrt{3}}{2}$

$\boxed{\theta = \frac{4\pi}{3}, \frac{5\pi}{3}}$

6. $\cos(\theta) = -1$

$\boxed{\theta = \pi}$

Find in degrees

7. $\tan(\theta) = 1$

$\boxed{\theta = 45°, 225°}$

8. $\tan(\theta) = \sqrt{3}$

$\boxed{\theta = 60°, 240°}$

Find length of arc:

9. $r = 3$ ft $\quad \theta = \frac{7\pi}{2}$ $\quad S = 3\left(\frac{7\pi}{2}\right) \rightarrow \boxed{S = \frac{21\pi}{2} \text{ ft}}$

10. $r = 8$ cm $\quad \theta = 7$ $\quad S = 7(8) \rightarrow \boxed{S = 56 \text{ cm}}$

Find area of sector

11. $r=6$, $\theta=\frac{\pi}{6}$ $\quad A=\frac{1}{2}\left(\frac{6^2}{1}\right)\left(\frac{\pi}{6}\right) \Rightarrow \frac{1}{2}\cdot\frac{36^{3}}{1}\cdot\frac{\pi}{6_{1}} = \boxed{3\pi}$ units^2

12. $r=4$ in, $\theta=\frac{2\pi}{3}$ $\quad A=\frac{1}{2}\left(\frac{4^2}{1}\right)\left(\frac{2\pi}{3}\right) \Rightarrow \frac{1}{2}\left(\frac{16}{1}\right)\left(\frac{2\pi}{3}\right) = \boxed{\frac{16\pi}{3}\text{ in}^2}$

13. $r=3$, $\theta = 2\pi - \frac{\pi}{4} = \frac{8\pi}{4} - \frac{\pi}{4} = \frac{7\pi}{4}$ $\quad A=\frac{1}{2}\left(\frac{3^2}{1}\right)\left(\frac{7\pi}{4}\right) = \frac{1}{2}\left(\frac{9}{1}\right)\left(\frac{7\pi}{4}\right) = \boxed{\frac{63\pi}{8}}$ units^2

State Amp & Per.

14. $y=\frac{1}{2}\sin(4\theta)$

$A=\frac{1}{2}$

$P=\frac{2\pi}{4}=\frac{\pi}{2}$

$\boxed{A=\frac{1}{2},\ P=\frac{\pi}{2}}$

15. $y=8\cos\left(\frac{1}{3}\theta\right)$

$A=8$

$P=\frac{2\pi}{1/3}=\frac{2\pi}{1}\cdot\frac{3}{1}=6\pi$

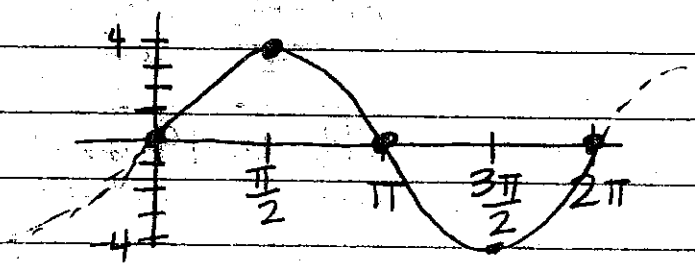
$\boxed{A=8,\ P=6\pi}$

State A, P & graph

16. $y=4\sin(x)$

$A=4$

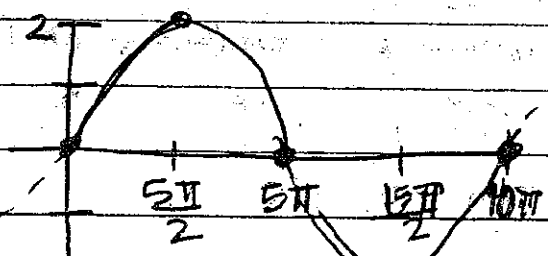
$P=2\pi$



17. $y=2\sin\left(\frac{1}{5}x\right)$

$A=2$

$P=\frac{2\pi}{1/5}=10\pi$



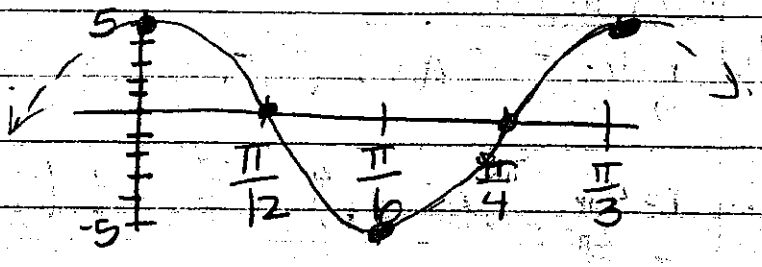
$\frac{\frac{\pi}{3}}{2} = \frac{\pi}{3} \cdot \frac{1}{2} = \frac{\pi}{6}$ $\left\{ \frac{\frac{\pi}{6}}{2} = \frac{\pi}{6} \cdot \frac{1}{2} = \frac{\pi}{12} \right.$

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

18. $y = 5\cos(6x)$

$A = 5$

$P = \frac{2\pi}{6} = \frac{\pi}{3}$



19. The initial dose of a drug is 125 mg. Concentration in the blood decreases at 30% an hour. How long until only 50 mg remain in the blood?

$y = 50$
$P = 125$
$r = -.3$
$t = ?$ hrs

$\frac{50}{125} = \frac{125e^{-.3t}}{125}$

$.4 = e^{-.3t}$

$\frac{\ln(.4)}{-.3} = \frac{-.3t \ln e}{-.3}$

$t = 3.05$ hrs

20. A stock costs \$10 a share and grew 7% annually. How long until the stock was worth \$15.75

$y = 15.75$
$P = 10$
$r = .07$
$t = ?$

$\frac{15.75}{10} = \frac{10e^{.07t}}{10}$

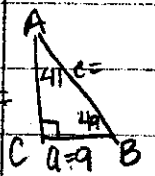
$1.575 = e^{.07t}$

$\frac{\ln(1.575)}{.07} = \frac{.07t \ln e}{.07}$

$t = 6.49$ yrs

Book: Pg 816 # 23, 26, 27, 29, 30 Calc on #23 only

23. Solve Right Δ. $a = 9$, $B = 49°$



$\cos(49) = \frac{9}{c}$

$c \cdot \cos(49) = 9$

$c = \frac{9}{\cos(49)}$

$c = 29.9$

$\tan(49) = \frac{b}{9}$

$9 * \tan(49) = b$

$b = 10.4$

$a = 9$ $B = 49°$

$b = 10.4$ $A = 41°$

$c = 13.7$ $C = 90°$

Book cont: 816: 23, 26, 27, 29, 30

Change to Radian

26. $-210°$ $\quad -210 \cdot \frac{\pi}{180} = \frac{-21 \cdot \pi}{18} = \boxed{\frac{-7\pi}{6}}$

27. $65°$ $\quad 65 \cdot \frac{\pi}{180} = \boxed{\frac{13\pi}{36}}$

28. $120°$

Change to Degree

29. $\frac{7\pi}{4}$ $\quad \frac{7\pi}{4} \cdot \frac{180}{\pi} = 7(45) = \boxed{315°}$

30. $-\frac{5\pi}{12}$ $\quad \frac{-5\pi}{12} \cdot \frac{180}{\pi} = -5 \cdot 15 = \boxed{-75°}$