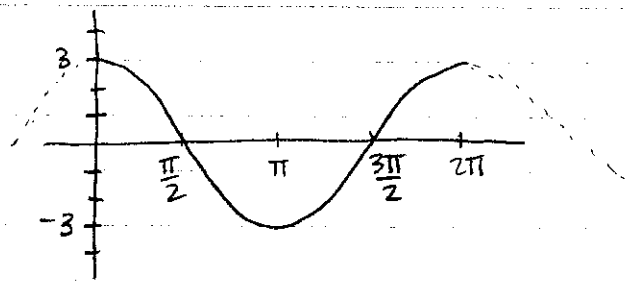
34 problems
Review #26 and
pg 778 #36 worth
2 points each.

score /36

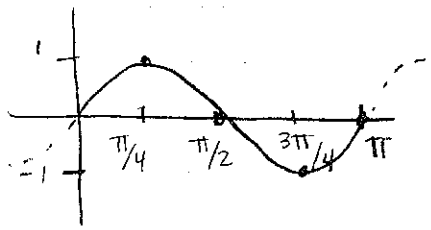
Algebra 2 ~ Assignment 53 Key

NEW

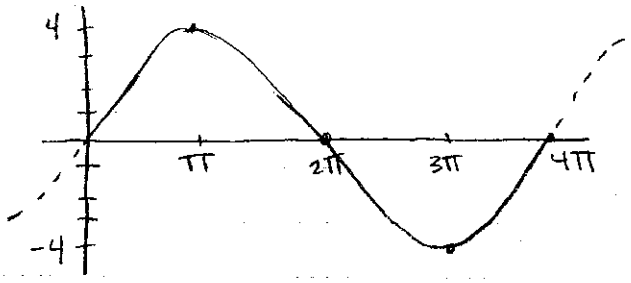
1. $y = 2\sin\theta$ — amplitude = 2, period = 2π
2. $y = \cos(3\theta)$ — amplitude = 1, period = $2\pi/3$
3. $y = 3\cos(\frac{1}{2}\theta)$ — amplitude = 3, period = $2\pi/\frac{1}{2} = 2\pi(2) = 4\pi$
4. $y = 5\sin(\frac{\pi}{5}\theta)$ — amplitude = 5, period = $2\pi/\frac{\pi}{5} = 2\pi \cdot \frac{5}{\pi} = 10$
5. $y = 6\sin(\frac{2}{3}\theta)$ — amplitude = 6, period = $2\pi/\frac{2}{3} = 2\pi \cdot \frac{3}{2} = 3\pi$
6. $y = 3\cos x$, amp = 3, period = 2π



7. $y = \sin 2x$, amp = 1, period = $2\pi/2 = \pi$



8. $y = 4\sin(\frac{1}{2}x)$, amp = 4, period = $\frac{2\pi}{\frac{1}{2}} = 2\pi \cdot \frac{2}{1} = 4\pi$

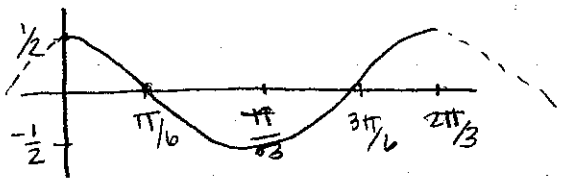


A53 ~ pg 2

9. $y = \frac{1}{2}\cos 3x$

amp = 1/2

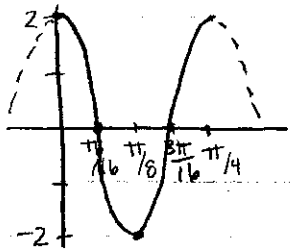
period = $2\pi/3$



10. $y = 2\cos 8x$

amp = 2

period = $\frac{2\pi}{8} = \frac{\pi}{4}$



REVIEW

11. Solve: $\sqrt{x-8} + \sqrt{x} = 4$

$\cdot\sqrt{x} \quad -\sqrt{x}$

$(\sqrt{x-8})^2 = (4-\sqrt{x})^2$

$(4-\sqrt{x})$

$x - 8 = 16 - 4\sqrt{x} - 4\sqrt{x} + x$

$-x \quad -16 \quad -16 \quad -x$

$-24 = -8\sqrt{x}$

$\frac{-24}{-8} = \frac{-8\sqrt{x}}{-8}$

$3 = \sqrt{x}$

$3^2 = (\sqrt{x})^2$

$\boxed{9 = x}$

12. Solve by quadratic formula: $4x^2 - 8x + 13 = 0$

$x = \frac{8 \pm \sqrt{64 - 4(4)(13)}}{2(4)} = \frac{8 \pm \sqrt{64 - 208}}{8} = \frac{8 \pm \sqrt{-144}}{8}$

$= \frac{8 \pm 12i}{8} = \boxed{\frac{2 \pm 3i}{2}}$

16
13
48
16
208

13. $2\log_3 x - \log_3(x-2) = 2$

$\log_3\left(\frac{x^2}{x-2}\right) = 2 \rightarrow \frac{x^2}{x-2} = 3^2 \rightarrow x^2 = 9x - 18$

$\rightarrow x^2 - 9x + 18 = 0 \rightarrow (x-6)(x-3) = 0 \rightarrow x-6=0 \quad x-3=0$

$\boxed{x = 6, \; x = 3}$

14. $\log_6 x = \frac{3}{2}\log_6 9 + \log_6 2$

$\log_6 x = \log_6(9^{3/2} \cdot 2)$

$x = 27 \cdot 2$

$\boxed{x = 54}$

Asmt 53 ~ Continued

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

16. $\tan\frac{2\pi}{3} = \frac{\frac{\sqrt{3}}{2}}{-\frac{1}{2}} = \boxed{-\sqrt{3}}$

17. $\sin\frac{7\pi}{6} = \boxed{-\frac{1}{2}}$

18. $\sin 90^\circ = \boxed{1}$

19. $\cos 135^\circ = \boxed{-\sqrt{2}/2}$

20. $\overset{\frown}{AB} = 2\left(\frac{\pi}{3}\right) = \boxed{\frac{2\pi}{3}}$

21. $\overset{\frown}{CA} = 2\left(\frac{2\pi}{3}\right) = \boxed{\frac{4\pi}{3}}$

22. radius = 15 in, arc length = 4 in

$4 = 15\theta \rightarrow \boxed{\theta = \frac{4}{15}}$

23. $r = 4\text{cm}$ $\theta = \pi/7$

$\text{Area} = \frac{1}{2}\left(\frac{\pi}{7}\right)4^2 = \frac{16\pi}{14} = \boxed{\frac{8\pi}{7}\ \text{cm}^2}$

24. $r = 7\text{Km}$ $\theta = 2\pi/5$

$\text{Area} = \frac{1}{2}\left(\frac{2\pi}{5}\right)7^2 = \boxed{\frac{49\pi}{5}\ \text{Km}^2}$

25. $1000e^{5x} = 75$

$e^{5x} = \frac{75}{1000} \rightarrow 5x = \ln(.075) \rightarrow x = \frac{\ln(.075)}{5} = \boxed{-.518}$

26. 1/2 life is 32 years, $p = 25g$

(2pts) a) $y = 25e^{[(-\ln 2/32)(10)]} = \boxed{20.13\ g.}$

b) $10 = 25e^{\left(\frac{-\ln 2}{32}\right)t} \rightarrow \frac{10}{25} = e^{\left(\frac{-\ln 2}{32}\right)t} \rightarrow \ln\left(\frac{10}{25}\right) = \left(\frac{-\ln 2}{32}\right)t$

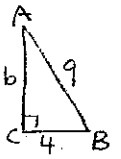
$\rightarrow t = \frac{\ln\left(\frac{10}{25}\right)}{\left(\frac{-\ln 2}{32}\right)} = \boxed{42.30\ \text{years}}$

BOOK : Page 778

24. $\tan(17.5) = \frac{x}{23.7} \rightarrow x = 23.7(\tan(17.5)) = \boxed{7.5}$

28. $\tan x = 0.5923 \rightarrow x = \tan^{-1}(0.5923) = 30.63 = \boxed{31^\circ}$

(2 pts) 36.

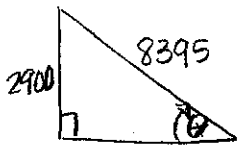


$4^2 + b^2 = 9^2 \rightarrow b = \sqrt{9^2 - 4^2} = 8.1$

$\sin\angle A = 4/9 \rightarrow \angle A = \sin^{-1}(4/9) = 26^\circ$

$\angle A = 26^\circ$	$a = 4$
$\angle B = 64^\circ$	$b = 8.1$
$\angle C = 90^\circ$	$c = 9$

52.



$\sin\theta = \frac{2900}{8395}$, $\theta = \sin^{-1}\left(\frac{2900}{8395}\right) = \boxed{20.2^\circ}$

Page 784:

28. $\frac{3600^\circ}{20} \cdot \frac{\pi}{180} = \boxed{20\pi \text{ radians}}$

36. $3.5 \cdot \frac{180}{\pi} = \boxed{\frac{630^\circ}{\pi}}$

180
3.5
900
540
630.0

38. -120°

positive: $-120^\circ + 360^\circ = \boxed{240^\circ}$

negative: $-120^\circ - 360^\circ = \boxed{-480^\circ}$

46. $-\frac{8\pi}{3}$

negative: $-\frac{8\pi}{3} + \frac{6\pi}{3} = \boxed{-\frac{2\pi}{3}}$

positive: $-\frac{2\pi}{3} + \frac{6\pi}{3} = \boxed{\frac{4\pi}{3}}$