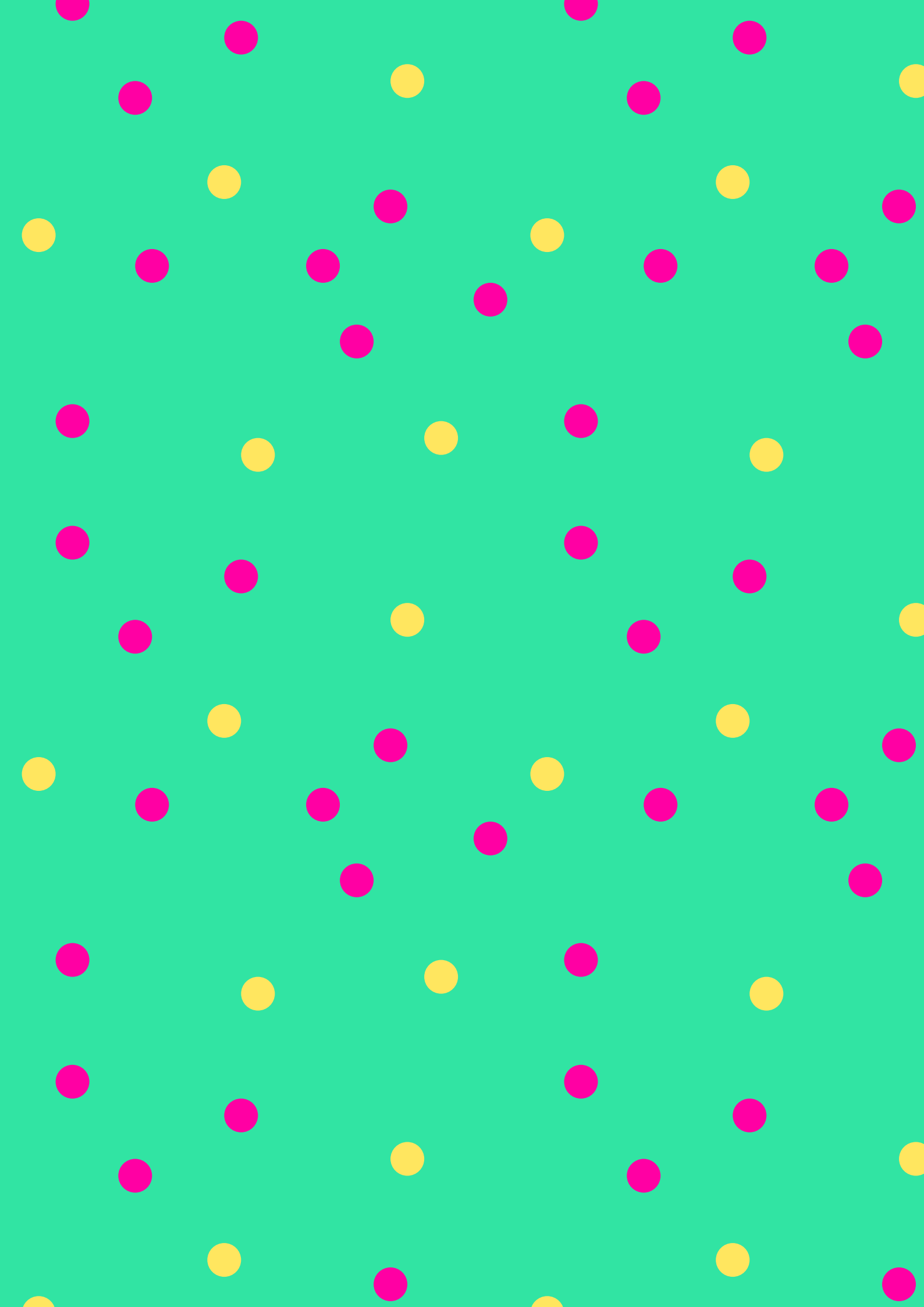


Section: 5.1

Assignment : 6

Section 5.2

30. $23°42'48''$

$23 + \frac{42}{60} + \frac{48}{3600}$

$23 + 0.7 + 0.0133$

23.7133 decimal degrees

33. $-84.64°$

$\boxed{-84°38'24''}$

$38 + 2\,40$

$R = \text{Degree} \times \frac{\pi}{180}$

$= \frac{240\pi}{180} \quad \frac{8}{6} \quad \frac{4}{3}$

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

43. $12°6'36''$

$12 + 0.1 + 0.01$

$= 12.11$

$12.11 \times \frac{\pi}{180} = \boxed{\frac{12.11\pi}{180}}$

48. $\frac{-7\pi}{6}$

$R = D \times \frac{\pi}{180}$

$\frac{180R}{\pi} = D$

$\frac{180(-7\pi)}{6\pi} = D$

$30(-7) = \text{Degree}$

$\boxed{-210}$

53. 2.7

$2.7 = D \times \frac{\pi}{180}$

$\frac{426}{\pi} = D$

58.

$313° + 360 = \boxed{673°}$ +ve

$313 - 360 = \boxed{-47°}$ -ve

69. $\frac{-7\pi}{18} + 2\pi = \frac{-7\pi}{18} + \frac{36\pi}{18} = \frac{29\pi}{18}$

72. $\theta = \frac{5\pi}{6} \quad r = 4m$

arc length $= r \times \theta$

$= 4 \times \frac{5\pi}{6}$

$= \frac{10}{3}\pi$

$= \boxed{10.472}$

98. arc length : $\frac{\pi}{6} \quad r = 1.2$

$\frac{1}{2}(1.2)^2 \frac{\pi}{6}$

$= \frac{1.44}{2} \times \frac{\pi}{6}$

$= \frac{1.44\pi}{12}$

$\boxed{= 0.37}$

108. $82°15'3''$

$82 + \frac{15}{60} + \frac{3}{3600}$

$82 + 0.25 + 0.00083$

$= 82.25083$

82.25083

(a) $\boxed{7.74917}$

(b) $180 - 82.25083 = \boxed{97.749}$

13.

(a) $\sin\theta = \frac{6}{10} = \frac{3}{5}$

$\cos\theta = \frac{8}{10} = \frac{4}{5}$

$\tan\theta = \frac{6}{8} = \frac{3}{4}$

$\text{cosec} = \frac{5}{3}$

$\sec = \frac{5}{4}$

$\cot = \frac{4}{3}$

(b) $\sin\theta = \frac{20}{12} = \frac{5}{3}$

$\cos\theta = \frac{16}{20} = \frac{4}{5}$

$\tan\theta = \frac{12}{16} = \frac{3}{4}$

$\text{cosec}\,\theta = \frac{3}{5}$

$\sec\theta = \frac{5}{4}$

$\cot = \frac{4}{3}$

16. $15^2 = 8^2 + x^2$

$225 - 64 = x^2$

$\sqrt{161} = x^2$

$\sin\theta = \frac{15}{\sqrt{161}}$

$\cos\theta = \frac{8}{\sqrt{161}}$

$\tan\theta = \frac{15}{8}$

$\text{cosec} = \frac{\sqrt{161}}{15}$

$\sec = \frac{\sqrt{161}}{8}$

$\cot = \frac{8}{15}$

20. $x^2 = 9 + 225$

$x^2 = 234$

$x = \sqrt{234}$

23. $\tan\theta = \frac{4}{7} = \frac{p}{b}$

$16 + 49$

$= \sqrt{55} = h$

$\sin\theta = \frac{4}{\sqrt{55}}$

$\cos\theta = \frac{7}{\sqrt{55}}$

$\operatorname{cosec} = \frac{\sqrt{55}}{4}$

$\sec = \frac{\sqrt{55}}{4}$

$\cot = \frac{7}{4}$

30.

$\cot = \frac{\sqrt{3}}{2} = \frac{B}{P}$

$(\sqrt{3})^2 + 4$

$7 = 3 + 4$

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

$\cos\theta = \frac{B}{H} = \frac{\sqrt{3}}{\sqrt{7}}$

45.

$\tan\theta = \frac{11}{60} = \frac{p}{B}$

$= 121 + 3600$

$H^2 = 3721$

$H = 61$

$\sec = \frac{1}{\cos} = \boxed{\frac{61}{60}}$

$\cos = \frac{60}{61}$

55.

$\tan 75^\circ = 2 + \sqrt{3}$

$75 + 180 = 255$

$\tan 255^\circ = 2 + \sqrt{3}$

68.

$\cos 58^\circ = \frac{B}{10}$

$\cos 58 = \sin 32$

$10 \times \cos 58^\circ = B$

$= 8.48 ft$

76.

$\cos\frac{\pi}{12} = \frac{\sqrt{2} + \sqrt{6}}{4}$

$\frac{180}{12} \quad \frac{90}{6} = \frac{45}{x}$

15

a. $\sin\frac{5\pi}{12}$

$= \sin\frac{\pi}{12} = 1 - \left(\frac{\sqrt{2} + \sqrt{6}}{4}\right)^2$

$= 1 - \frac{2 + 6 + 4\sqrt{3}}{16}$

$= 1 - \frac{8 + 4\sqrt{3}}{16}$

$= 1 - \frac{2 + \sqrt{3}}{4}$

$= 4\frac{-2 + \sqrt{3}}{4}$

$= \frac{2 + \sqrt{3}}{4}$

$\sin^2 x = \frac{2 + \sqrt{3}}{4}$

$\sin\frac{\pi}{12} = \sqrt{\frac{2 + \sqrt{3}}{4}}$

$\sin\frac{5\pi}{12} = \sqrt{\frac{2 + \sqrt{3}}{4}}$

31. SOH CAH TOA

	Sin	Cos	Tan	Csc	sec	Cot
30	$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{3}}$	2	$\frac{2}{\sqrt{3}}$	$\sqrt{3}$
45	$\frac{1}{\sqrt{2}}$	$\frac{1}{\sqrt{2}}$	1	$\sqrt{2}$	$\sqrt{2}$	1
60	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$	$\sqrt{3}$	$\frac{2}{\sqrt{3}}$	2	$\frac{1}{\sqrt{3}}$

38. $\cos^2 45^\circ + \tan^2 60^\circ$

$\frac{1}{2} + 3$

$= \frac{7}{2}$

42.

$\sin\theta = \frac{8}{17} = \frac{p}{H}$

$\cos\theta = \boxed{\frac{15}{17}}$

$17^2 = x^2 + 8^2$

$289 = x^2 + 64$

$B = 15$

5.3

15. $5, -12$

$\sin\theta = \frac{-12}{13} \quad \cos\theta = \frac{5}{13} \quad \tan\theta = \frac{-12}{5}$

$\csc\theta = \frac{-13}{12} \quad \sec\theta = \frac{13}{5} \quad \cot\theta = \frac{-5}{12}$

21.

	Sin	Cos	Tan	Csc	sec	Cot
0	0	1	0	∞	1	∞
90°	1	0	∞	1	∞	0
180°	0	-1	0	∞	-1	∞
270°	-1	0	∞	-1	∞	0
360°	0	1	0	∞	1	∞

25. $\frac{2\pi}{3} = \frac{\pi}{3}$

31. $\sin(-120) = -\frac{\sqrt{3}}{2}$

38. $\frac{5\pi}{3} = \pi/3$

48. $\csc\pi \to$ undef (∞)

55 $\theta = 30°$ $\theta = 150°$

64 $\sqrt{11^2+60^2} = 2c$

$2c = 71$

$\cos\theta = \frac{-11}{71}$, $\sin\theta = \frac{-60}{71}$

70. $\sin^2\theta + \cos^2\theta = 1$

$\cos^2\theta = 1 - (\frac{8}{17})^2$

$= \frac{-15}{17}$

80. $\sin(180° + \theta)$

$= -\sin\theta$ true

86. $\cos 45° \cdot \sin 240° \cdot \tan 135 \times \cot 60°$

$= \frac{\sqrt{2}}{2} \cdot \frac{\sqrt{3}}{2} \cdot -1 \cdot \frac{\sqrt{3}}{3}$

95. $\sin 30° = \frac{1}{2}$

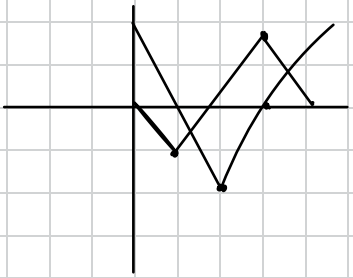
5.5

9. $-y = \sin(x)$

10. $-y = \cos(2x)$

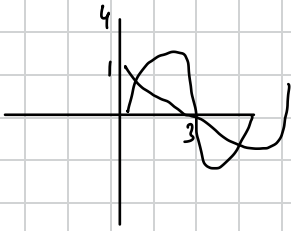
19. $-y = 5\cos(x)$

24. $-y = 2\sin(x)$



29. $-y = 4\sin\frac{\pi}{3}x$

32. $-y = \cos(-\frac{1}{2}x)$

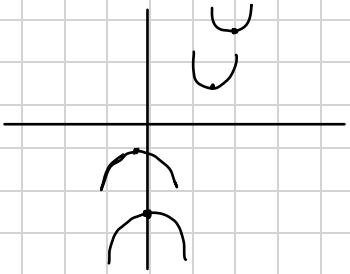


26. a. 6π

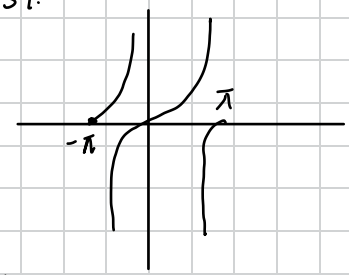
5.6

19. $-y = -5\sec x$

$-y = \csc(x - \frac{\pi}{4})$

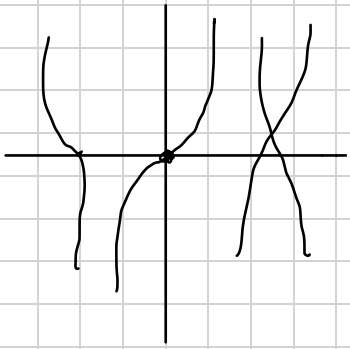


39.



43. $-y = \tan 2x$

52. $-y = 5\cot(\frac{\pi}{4}x)$



66.

As $x \to 0^-$, $f(x) \to -\infty$

$x \to 0^+$, $f(x) \to \infty$

5.7

1. $\sin\theta\left(\frac{\sqrt{2}}{2}\right) = \frac{\pi}{4}$

9. $\sin^{-1}\pi =$ undefined

13. $\sin^{-1}\frac{\sqrt{3}}{2} + \sin^{-1}\frac{1}{2}$

$\frac{\pi}{3} + \frac{\pi}{6}$

18. $\tan^{-1}(-\sqrt{3}) = -\frac{\pi}{3}$

22. $\cos\frac{4}{3}$ = undef

26. $\tan(-\frac{\sqrt{3}}{3}) = -\frac{\pi}{6}$

37.

$2\cos^{-1}(-\frac{\sqrt{3}}{2}) - \tan^{-1}(\frac{\sqrt{3}}{3})$

$= 2 \cdot \frac{2\pi}{3} - \frac{\pi}{6}$

$= \frac{7\pi}{6}$

38.

$\sin^{-1}(-\frac{4}{5}) = -53$

$\theta = 180 + 53$

$= 233$