

Solutions for Questions of Old Exams

1 Section 5.1

1. 90π rad/sec
2. 20π cm
3. $\frac{35\pi}{6}$ cm
4. $35^\circ 36' 23''$
5. $\frac{40\pi}{9}$ cm
6. $\frac{52800}{13}$ rad/min
 - (a) $\frac{16\pi}{45}$ cm
 - (b) $\frac{96\pi}{5}$ ft/sec
7. 120°
8. 5 cm
9. $29^\circ 9' 37''$
10. $\frac{1}{36}$ rev.
11. $\frac{7}{2}$ feet
12. $k = \frac{20}{\pi}$
13. 355°
14. $31^\circ 15'$
15. 1800π inch/min
16. 1.2
17. 4π cm
18. $\frac{25\pi}{144}$ rad
19. $\frac{4\pi}{3}$ cm
20. $\frac{\pi}{5}$ rad and 28°
21. $\left(\frac{300}{\pi}\right)^\circ$
22. $\frac{\pi}{2}$ cm
23. 337°

24. 420°
25. $\frac{\pi}{3}$ cm/sec
26. b
27. $\frac{10\pi}{3}$ rad/sec

2 Section 5.2

1. $11\sqrt{3}$ ft
 - (a) $\frac{3}{4}$
 - (b) $\frac{6\sqrt{3}+\sqrt{6}}{2}$
2. 4 ft
3. 30°
4. $x = 10(\sqrt{3} - 1)$
5. 20 ft
6. $3500(\sqrt{3} + 1)$

3 Section 5.3

1. a
 - (a) $\frac{-3\sqrt{3}}{2}$
 - (b) $\frac{4\sqrt{3}}{3}$
2. $\frac{-8}{15}$
3. $\frac{-19}{20}$
4. a
5. d
 - (a) $\frac{5\sqrt{3}}{2}$
 - (b) $\frac{3-\sqrt{3}}{2+\sqrt{3}}$
 - (c) $\frac{-\sqrt{3}}{3}$
 - (d) $\frac{3-5\sqrt{3}}{3}$
6. b

7. $-\frac{5}{12}$
8. negative, positive, negative
9. $\frac{15}{4}$
10. c
11. e
12. d
13. *II*
14. $6(\sqrt{3} - \sqrt{2})$
15. $-\frac{3\sqrt{5}}{5}$
16. a
17. $-\frac{\sqrt{30}}{5}$
18. c
19. $\frac{5}{4}$
20. $-\frac{\sqrt{1+m^2}}{m}$
21. $-\frac{\sqrt{5}}{2}$
22. $-\frac{3\sqrt{5}}{5}$
23. a

4 Section 5.4

1. $\frac{3}{5}$
2. *III* quadrant , negative
3. $\sqrt{3}$
4. $-\frac{5}{2}$
5. $\left(-\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$
6. $-11\sqrt{3}$
7. $-\frac{\sqrt{\cot^2 \theta + 1}}{\cot \theta}$
8. $\left(-\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$

9. b
10. even
11. $1 - \cot^2 t$
12. $\left(\frac{1}{2}, -\frac{\sqrt{3}}{2}\right)$
13. odd
14. *I* quadrant
15. $-\frac{\sqrt{2}}{2}$
16. $\left(-\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$
17. a
18. (a) $2 \csc t$
(b) $\tan t$
(c) 0
(d) $2 \cot x$
19. $\frac{1}{2}$
20. $-\frac{37}{15}$
21. $\frac{-3\sqrt{3}}{2}$
22. -2
23. $\frac{1}{2}$
24. $\frac{3\sqrt{2}}{4}$
25. $\left(\frac{2}{3}, \frac{\sqrt{5}}{3}\right)$
26. $\frac{9\pi}{10}$
27. $\left(-\frac{\sqrt{3}}{6}, -\frac{\sqrt{33}}{6}\right)$
28. $\left(-\frac{\sqrt{3}}{2}, \frac{-1}{2}\right)$
29. (0, 1)
30. $\left(\frac{-1}{2}, \frac{\sqrt{3}}{2}\right)$
31. $\left(\frac{-7}{25}, \frac{24}{25}\right)$

32. -1
33. $\frac{1}{5}$
34. $\frac{\sqrt{1+\tan^2\theta}}{1+\tan^2\theta}$
35. $-\frac{9}{16}$
36. $3 \cos \theta$
37. $\frac{4}{3}$
38. (a) $\sin x + \cos x$
(b) 2
(c) $2 \sec x \tan x - 1$
(d) $2 \sec x \csc x$
(e) $\sin^6 x$
(f) $-\sin^4 x$
(g) $\tan \theta$
(h) $\csc^4 x$
(i) $\cot \theta \csc \theta$
(j) 1
(k) -1
(l) $1 + 2 \cot^2 \theta$
(m) $2 \sec x$
39. a

Section 5.5