IM2 Book 3 Selected Answers

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1. $10\sqrt{2}$
2. (a) $A = \left(\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$, $B = \left(\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$
   (b) cos()
   (c) sin()
3. (a) cos(40°)
   (b) sin(40°)
4. (a) $m_{OA} = 1$, $m_{OB} = \frac{\sqrt{3}}{3}$
   (b) tan()
5. 470 ft
6. $\frac{3}{5}$
7. Length of line: 3.42 ft
   Distance to bobber: 9.40 ft
8. 23.82 ft
9. (a) π; $(-1, 0)$
   (b) $\frac{\pi}{2}$; $(0, 1)$
10. –
11. –
12. –
13. $\cos A = \frac{\sqrt{21}}{5}$, $\tan A = \frac{2}{\sqrt{21}}$, $\sin^2 A + \cos^2 A = 1$
14. (a) 79 ft
    (b) 7,873 ft^2
    (c) 135 ft
15. 67°

16. 21.6°

17. No

18. 54.8 ft

19. $\frac{2\pi}{3}$

20. $\frac{6\pi}{5}$, $\frac{9\pi}{5}$

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

22. length = 5.22; Area = 12.68

23. $\frac{ab\sin C}{2}$

24. 9.9 in^2

25. $(-1,0)$, $(-1,0)$

26. –

27. $\pi - \alpha$

28. (a) $(0,1)$
    (b) $\left(\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$
    (c) $\left(\frac{-1}{2}, \frac{\sqrt{3}}{2}\right)$
    (d) $\left(\frac{-\sqrt{3}}{2}, \frac{-1}{2}\right)$

29. (a) $\left(\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$; $\cos\theta$ gives the x-coordinate; $\sin\theta$ gives the y-coordinate
    (b) $\cos\frac{3\pi}{4} = \frac{-\sqrt{2}}{2}$, $\sin\frac{3\pi}{4} = \frac{\sqrt{2}}{2}$

30. (a) $AD = b - x$, $BD = \sqrt{a^2 - x^2}$
    (b) $c^2 = a^2 + b^2 - 2bx$
    (c) $c^2 = a^2 + b^2 - 2ab\cos C$

31. 5.01 in.

32. (a) $\left(\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$, $m = \sqrt{3}$
    (b) $\tan\theta$

33. 205°

34. (a) $\sin\frac{2\pi}{3} = \frac{\sqrt{3}}{2}$, $\cos\frac{2\pi}{3} = \frac{-1}{2}$, $\tan\frac{2\pi}{3} = -\sqrt{3}$
    (b) $\sin\frac{4\pi}{3} = \frac{-\sqrt{3}}{2}$, $\cos\frac{4\pi}{3} = \frac{-1}{2}$, $\tan\frac{4\pi}{3} = \sqrt{3}$