Additional Mathematics Exercise 6 Answers

(*Trigonometric Formulae Involving Compound Angles*)

1. (a) $\dfrac{-\sqrt{6}-\sqrt{2}}{4}$ (b) $2+\sqrt{3}$
2. $\sqrt{3}$
3. (a) $\tan 4w$ (b) $2\cos A\cos 2B$
4. (a) $\dfrac{\sqrt{2}}{2}(\cos x+\sin x)$ (b) $\dfrac{\cos x-\sqrt{3}\sin x}{\sqrt{3}\cos x+\sin x}$
5. 0
6. –
7. –
8. –
9. –
10. –
11. (a) maximum: $\sqrt{10}$, minimum: $-\sqrt{10}$
    (b) maximum: $5\sqrt{2}$, minimum: $-5\sqrt{2}$
12. (a) maximum: $4+\sqrt{13}$, minimum: $4-\sqrt{13}$
    (b) maximum: $\dfrac{1}{4-\sqrt{13}}$, minimum: $\dfrac{1}{4+\sqrt{13}}$
13. $34.4°$, $168°$
14. (a) $R=\sqrt{5}$, $\alpha=63.4°$ (b) $\beta=90°+\alpha$
15. $\dfrac{9}{13}$
16. $2\left[\dfrac{(1+t)(2+t)}{1+t^2}\right]^2$
17. $\dfrac{1}{3}\tan A$
18. (a) $45°$, $225°$ (b) $30°$, $150°$, $210°$, $330°$ (c) $0°$, $180°$, $360°$
19. –
20. –
21. $\dfrac{14}{3}$
22. (a) – (b) $\cot\dfrac{\theta}{2}-\cot 8\theta$ (c) –
23. –
24. –

25. $70.5°, 289.5°$

26. $b + 1 - a$

27. $\frac{\sqrt{3}}{8}$

28. –

29. –

30. –

31. –

32. (a) $30°, 45°, 90°, 135°, 150°, 210°, 225°, 270°, 315°, 330°$

    (b) $0°, 60°, 90°, 180°, 270°, 300°, 360°$

    (c) $30°, 90°, 150°, 210°, 270°, 330°$

33. $0°, 18°, 60°, 90°, 120°, 162°, 180°, 234°, 240°, 300°, 306°, 360°$

34. (a) $\frac{1}{2}\left[\sin\left(A+\frac{\theta}{2}\right)-\sin\left(A-\frac{\theta}{2}\right)\right]$ (b) – (c) –

35. (a) –

    (b) $22.5°, 45°, 67.5°, 90°, 112.5°, 135°, 157.5°, 202.5°, 225°, 247.5°, 270°, 292.5°, 315°, 337.5°$