Additional Mathematics Exercise 14 Answers

(*Differentiation of Trigonometric Functions*)

1. (a) $\frac{3}{2}$ (b) $\frac{4}{3}$ (c) $\frac{8}{25}$

   (d) $\frac{1}{9}$

2. 1

3. (a) $-\frac{1}{2}(\sin x)^{-\frac{3}{2}}\cos x$ (b) $-12x^2(\sin x^3)^{-5}\cos x^3$

   (c) $12\sin x\cos^2 x(1-\cos^3 x)^3$ (d) $\frac{1}{x^3}\sin\frac{1}{x}-\frac{1}{x^2}\cos\frac{1}{x}$

   (e) $-2\cos x\sin^4 x+3\sin^2 x\cos^3 x$ (f) $\frac{6x(x^2-\sin x)^2(2\sin x-x\cos x)}{(x^2+\sin x)^4}$

4. –

5. $[\cos(x^3\cos x)](3x^2\cos x-x^3\sin x)$

6. (a) $-2x\sec^2(x^2+2)$ (b) $\frac{2}{x^3}\csc\frac{1}{x^2}\cot\frac{1}{x^2}$

   (c) $\frac{3x}{2}\tan(x^2+1)[\sec(x^2+1)]^{\frac{3}{4}}$ (d) $2\sec^2 x\tan^2 x+\sec^4 x$

   (e) $-\frac{\sin 2x(1+\tan x)+1}{(1+\tan x)^2}$

7. –

8. (a) $\frac{1}{2\cos 3y\cos 2y-3\sin 3y\sin 2y}$ (b) $-\frac{8\sec^2 4x}{\sin\frac{y}{2}}$

   (c) $\frac{1+\cos\theta}{-\sin\theta}$ (d) $\frac{y-\tan y}{x\tan^2 y}$

9. (a) $\sec^3 x+\tan^2 x\sec x$ (b) $-4x\sin x+8\cos x$

   (c) $-9\csc^2 y\cot y$

10. $-\frac{8}{\pi^3}\sin\frac{2}{\pi}$

11. –

12. –

13. (a) – (b) –