

## 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) -