Essential Mathematics Skills - Question Database - Chapter 4

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4 DIFFERENTIATION

1. Find $\frac{dy}{dx}$ if $y = \frac{2}{x^3}$.
2. Find $\frac{dy}{dx}$ if $y = \frac{4}{x^2}$.
3. Find $\frac{dy}{dx}$ if $y = x - \frac{1}{x^2}$.
4. If $f(x) = 1 - \frac{1}{x^2}$ then $f'(x)$ is
5. If $f(x) = \frac{1}{2x}$ then $f'(x)$ is
6. If $f(x) = \frac{1}{3}x^{-3}$ then $f'(x)$ is
7. Find $\frac{dy}{dx}$ if $y = \sin 2x$.
8. Find $\frac{dy}{dx}$ if $y = \frac{1}{3}\cos 3x$.
9. Find dy/dx if $y = \sin(3x^2)$.
10. Find y' if $y = 2\cos(x^2)$.
11. Find $f'(x)$ if $f(x) = \frac{1}{(1-3x)^2}$.
12. Find $\frac{dy}{dx}$ if $y = x^2 e^x$.
13. Find $f'(x)$ if $f(x) = \frac{x}{x^2-3}$.
14. Find $x'(t)$ if $x(t) = e^{-t}\sin(2t)$.
15. Find $\frac{dy}{dt}$ if $y(t) = e^t(\cos t + \sin t)$.
16. Find $\frac{dy}{dx}$ if $y = \sin^3(2x)$.
17. Find $\frac{dy}{dx}$ if $y = \ln(\ln x)$.
18. Find $\frac{dy}{dx}$ if $y = \sin(x + x^3)$.
19. Find dy/dx if $y = x\cos x$.
20. Find $\frac{dy}{dx}$ if $y = x\sin x$.
21. Find $\frac{dy}{dx}$ if $y = x^2\sin x$.

22. Find $\dfrac{dy}{dx}$ if $y = x(1-x)^4$.

23. Find $\dfrac{dy}{dx}$ if $y = x(x+2)^6$.

24. Find $\dfrac{dy}{dx}$ if $y = xe^x$.

25. Find $\dfrac{d}{dx}\left(\dfrac{\sin x}{x}\right)$.

26. Find $\dfrac{d}{dx}\left(\cos^2(3x)\right)$.