

- (1) Given $y = 5x^4 - 4x^5 + 6x + 10$, find $\frac{d^3y}{dx^3}$ at $x = -2$ (2) Given $y = \frac{x^2 + 2}{x}$, find $\frac{d^2y}{dx^2}$ at $x = 1$
- (3) Given $y = (2x^3 - 5)(6x^2 + 4x)$, find $\frac{d^3y}{dx^3}$ at $x = 2$ (4) Given $y = x^{-4} + 2\sqrt{x}$, find $y'''(1)$
- (5) Given $y = \frac{3 - x^2}{x}$, find $\frac{d^2y}{dx^2}$ at $x = 2$ (6) Given $y = \frac{x + 2}{(x + 1)^2}$, find $\frac{d^3y}{dx^3}$ at $x = -2$
- (7) Given $y = x^{-5} + 2x^3 - x^{1/5}$, find $\frac{d^3y}{dx^3}$ at $x = -1$ (8) Given $y = (x + \sqrt{x})(2x + 1)$, find $y''(4)$
- (9) Given $y = \frac{3x^2 - 5x}{2x^3}$, find $\frac{d^2y}{dx^2}$ at $x = 3$ (10) Given $y = \frac{2x - 3\sqrt{x}}{4\sqrt{x}}$, find $\frac{d^2y}{dx^2}$ at $x = 1$
- (11) Given $y = 8x^5 - 12x^6 - 5x + 10$, find $\frac{d^3y}{dx^3}$ at $x = -1$ (12) Given $y = \frac{2x + 7}{3x}$, find $y''(-1)$
- (13) Given $y = (3x^2 + 4x)(x^3 - 5)$, find $\frac{d^3y}{dx^3}$ at $x = 1$ (14) Given $y = \frac{4x + 5}{6x}$, find $y''(3)$
- (15) Given $y = x^{-3} - 3\sqrt{x}$, find $y'''(4)$ (16) Given $y = \frac{x - 3}{(x - 1)^2}$, find $\frac{d^3y}{dx^3}$ at $x = -2$
- (17) Given $y = x^{-4} - 3x^2 + x^{1/3}$, find $\frac{d^3y}{dx^3}$ at $x = 1$ (18) Given $y = \frac{2\sqrt{x} - 5x}{3\sqrt{x}}$, find $\frac{d^2y}{dx^2}$ at $x = 1$
- (19) Given $y = \frac{4x^3 + 3x}{3x^2}$, find $\frac{d^2y}{dx^2}$ at $x = -3$ (20) Given $y = (3x - 1)(2x + \sqrt{x})$, find $y''(1)$

ANSWERS:

- (1) -1200 (2) 4 (3) 3264 (4) $\frac{-477}{4}$ (5) $\frac{3}{4}$ (6) 18 (7) $\frac{-24786}{125}$ (8) $\frac{151}{32}$
- (9) $\frac{-2}{27}$ (10) $\frac{-1}{8}$ (11) 1920 (12) $\frac{-14}{3}$ (13) 276 (14) $\frac{5}{81}$ (15) $\frac{-51}{1024}$ (16) $\frac{-22}{81}$
- (17) $\frac{-3230}{27}$ (18) $\frac{5}{12}$ (19) $\frac{-2}{27}$ (20) $\frac{29}{2}$