

1)

$$\begin{aligned} g(t) &= 6t^{\frac{5}{3}} \\ g'(t) &= 10t^{\frac{2}{3}} \end{aligned}$$

2)

$$\begin{aligned} B(x) &= \frac{8x^2 - 6x + 11}{x-1} \\ B'(x) &= \frac{(x-1)d[8x^2 - 6x + 11] - [8x^2 - 6x + 11]d}{(x-1)^2} \\ B'(x) &= \frac{(x-1)(16x-6) - (8x^2 - 6x + 11)}{(x-1)^2} \end{aligned}$$

3)

$$\begin{aligned} G(v) &= \frac{\sqrt{v^3+1}}{\sqrt{v^3-1}} \\ G'(v) &= \frac{\sqrt{v^3+1} d[\sqrt{v^3-1}] - [\sqrt{v^3-1}] d[\sqrt{v^3+1}]}{(\sqrt{v^3+1})^2} \\ G'(v) &= \frac{(v^3+1)(3v^2) - (v^3-1)(3v^2)}{(v^3+1)^2} \end{aligned}$$

4)

$$\begin{aligned} f(s) &= 15 - s - 4s^2 - 5s^4 \\ f'(s) &= -1 - 8s - 20s^3 \end{aligned}$$

5)

$$\begin{aligned} f(x) &= \frac{1}{1+x+x^2+x^3} = (1+x+x^2+x^3)^{-1} \\ f'(x) &= -1 \left[ 1+x+x^2+x^3 \right]^{-2} \cdot d[1+x+x^2+x^3] \\ f'(x) &= - (1+x+x^2+x^3)^{-2} \cdot (1+2x+3x^2) \end{aligned}$$

6)

$$\begin{aligned} M(x) &= \frac{2x^3 - 7x^2 + 4x + 3}{x} \\ M(x) &= \frac{2x^3}{x^2} - \frac{7x^2}{x^2} + \frac{4x}{x^2} + \frac{3}{x^2} \\ M(x) &= 2x - 7x^{-1} + 4x^{-2} + 3x^{-3} \\ M'(x) &= 2 - 7 - 4x^{-2} - 6x^{-4} \end{aligned}$$

7)

$$\begin{aligned} f(x) &= 3x^2 + x^{\frac{4}{3}} \\ f'(x) &= 6x + \frac{4}{3}x^{\frac{1}{3}} \end{aligned}$$

8)

$$\begin{aligned} p(x) &= 1 + \frac{1}{x} + \frac{1}{x^2} + \frac{1}{x^3} \\ p(x) &= 1 + x^{-1} + x^{-2} + x^{-3} \\ p'(x) &= -x^{-2} - 2x^{-3} - 3x^{-4} \end{aligned}$$

9)

$$\begin{aligned} g(x) &= x^4 - x^{\frac{3}{4}} \\ g'(x) &= 4x^3 - \frac{3}{4}x^{-\frac{1}{4}} \end{aligned}$$

10)

$$\begin{aligned} h(x) &= (5x-4)^2 \\ h'(x) &= 2[5x-4] \cdot d[5x-4] \\ h'(x) &= 2(5x-4)(5) \end{aligned}$$

<p>11)</p> $k(x) = \frac{2x^2 - 4x + 1}{6x - 5}$ $k'(x) = \frac{2x^2 - 4x + 1}{6x - 5} d \frac{1}{6x - 5} + \frac{1}{6x - 5} d \frac{2x^2 - 4x + 1}{6x - 5}$ $k'(x) = (2x^2 - 4x + 1)(6) + (6x - 5)(4x - 4)$	<p>12)</p> $F(t) = t^2 + t^{-2}$ $F'(t) = 2t - 2t^{-3}$
<p>13)</p> $f(x) = \frac{4x - 5}{3x + 2}$ $f'(x) = \frac{3x + 2 d [4x - 5] - [4x - 5] d [3x + 2]}{(3x + 2)^2}$ $f'(x) = \frac{(3x + 2)(4) - (4x - 5)(3)}{(3x + 2)^2}$	<p>14)</p> $N(z) = \frac{4z^2}{3z + 2}$ $N'(z) = \frac{3z + 2 d [4z^2] - [4z^2] d [3z + 2]}{(3z + 2)^2}$ $N'(z) = \frac{(3z + 2)(8z) - (4z^2)(3)}{(3z + 2)^2}$
<p>15)</p> $k(r) = r^3(3r^4 - 7r^2 + 2r)$ $k(r) = 3r^7 - 7r^5 + 2r^4$ $k'(r) = 21r^6 - 35r^4 + 8r^3$	<p>16)</p> $S(x) = \frac{1}{(6x + 5)^3}$ $S(x) = (6x + 5)^{-3}$ $S'(x) = -3(6x + 5)^{-4}(6)$
<p>17)</p> $f(x) = \frac{x}{x+2}$ $f'(x) = \frac{(x+2) \cdot 1 - x \cdot 1}{(x+2)^2}$ $= \frac{x+2 - x}{(x+2)^2}$ $f''(x) = \frac{2}{(x+2)^2}$ $\frac{2}{(x+2)^2} = \frac{1}{2}$ $(x+2)^2 = 4$ $x+2 = \pm 2$ $x = -4, 0$ $\begin{matrix} \text{points} \\ (0, 0) \\ (-4, 2) \end{matrix}$	