1)

$g(t) = 6t^{5/3}$

$g'(t) = 10t^{2/3}$

2)

$B(x) = \frac{8x^2-6x+11}{x-1}$

$B'(x) = \frac{(x-1)\,d[8x^2-6x+11] - [8x^2-6x+11]\,d[x-1]}{(x-1)^2}$

$B'(x) = \frac{(x-1)(16x-6) - (8x^2-6x+11)}{(x-1)^2}$

3)

$G(v) = \frac{v^3-1}{v^3+1}$

$G'(v) = \frac{(v^3+1)\,d[v^3-1] - [v^3-1]\,d[v^3+1]}{(v^3+1)^2}$

$G'(v) = \frac{(v^3+1)(3v^2) - (v^3-1)(3v^2)}{(v^3+1)^2}$

4)

$f(s) = 15 - 5 - 4s^2 - 5s^4$

$f'(s) = -1 - 8s - 20s^3$

5)

$f(x) = \frac{1}{1+x+x^2+x^3} = (1+x+x^2+x^3)^{-1}$

$f'(x) = -1[1+x+x^2+x^3]^{-2} \cdot d[1+x+x^2+x^3]$

$f'(x) = -(1+x+x^2+x^3)^{-2} \cdot (1+2x+3x^2)$

6)

$M(x) = \frac{2x^3-7x^2+4x+3}{x}$

$M(x) = \frac{2x^3}{x^2} - \frac{7x^2}{x^2} + \frac{4x}{x^2} + \frac{3}{x^2}$

$M(x) = 2x - 7x + 4x^{-1} + 3x^{-2}$

$M'(x) = 2 - 7 - 4x^{-2} - 6x^{-3}$

7)

$f(x) = 3x^2 + x^{4/3}$

$f'(x) = 6x + \frac{4}{3}x^{1/3}$

8)

$p(x) = 1 + \frac{1}{x} + \frac{1}{x^2} + \frac{1}{x^3}$

$p(x) = 1 + x^{-1} + x^{-2} + x^{-3}$

$p'(x) = -x^{-2} - 2x^{-3} - 3x^{-4}$

9)

$g(x) = x^4 - x^{3/4}$

$g'(x) = 4x^3 - \frac{3}{4}x^{-1/4}$

10)

$h(x) = [5x-4]^2$

$h'(x) = 2[5x-4] \cdot d[5x-4]$

$h'(x) = 2(5x-4)(5)$

11)

$k(x) = (2x^2 - 4x + 1)(6x - 5)$

$k'(x) = (2x^2 - 4x + 1)\,d[6x-5] + (6x-5)\,d[2x^2 - 4x + 1]$

$k'(x) = (2x^2 - 4x + 1)(6) + (6x - 5)(4x - 4)$

12)

$F(t) = t^2 + t^{-2}$

$F'(t) = 2t - 2t^{-3}$

13)

$f(x) = \frac{4x-5}{3x+2}$

$f'(x) = \frac{(3x+2)\,d[4x-5] - (4x-5)\,d[3x+2]}{(3x+2)^2}$

$f'(x) = \frac{(3x+2)(4) - (4x-5)(3)}{(3x+2)^2}$

14)

$N(z) = \frac{4z^2}{3z+2}$

$N'(z) = \frac{(3z+2)\,d[4z^2] - (4z^2)\,d[3z+2]}{(3z+2)^2}$

$N'(z) = \frac{(3z+2)(8z) - (4z^2)(3)}{(3z+2)^2}$

15)

$k(r) = r^3(3r^4 - 7r^2 + 2r)$

$k(r) = 3r^7 - 7r^5 + 2r^4$

$k'(r) = 21r^6 - 35r^4 + 8r^3$

16)

$S(x) = \frac{1}{(6x+5)^3}$

$S(x) = (6x+5)^{-3}$

$S'(x) = -3(6x+5)^{-4}(6)$

17)

$f(x) = \frac{x}{x+2}$

$f'(x) = \frac{(x+2)\cdot 1 - x \cdot 1}{(x+2)^2}$

$= \frac{x+2-x}{(x+2)^2}$

$f'(x) = \frac{2}{(x+2)^2}$

$\frac{2}{(x+2)^2} = \frac{1}{2}$

$(x+2)^2 = 4$

$x+2 = \pm 2$

$x = -4, \; 0$

points

$(0, 0)$

$(-4, 2)$