

Sec 3.1 day 1 page 181 (3-22, 25, 27)

③ $f'(x) = 0$ ④ $f'(x) = 0$ ⑤ $f'(x) = -\frac{2}{3}$

⑥ $F'(x) = 6x^7$ ⑦ $f'(x) = 3x^2 - 4$ ⑧ $f'(t) = 3t^5 - 12t^3 + 1$

⑨ $f(t) = \frac{1}{4}t^4 + 2$
 $f'(t) = t^3$

⑩ $h(x) = 2x^2 + 3x - 4x - 6$
 $= 2x^2 - x + 6$
 $h'(x) = 4x - 1$

⑪ $A(s) = -12s^{-5}$
 $A'(s) = 60s^{-6}$
or $\frac{60}{s^6}$

⑫ $B(y) = cy^{-6}$
 $B'(y) = \frac{-6c}{y^7}$

⑬ $g(t) = 2t^{-3/4}$
 $g'(t) = -\frac{3}{2}t^{-7/4}$

⑭ $h(t) = t^{1/4} - 4e^t$
 $h'(t) = \frac{1}{4}t^{-3/4} - 4e^t$

⑮ $y = 3e^x + 4x^{-1/3}$
 $y' = 3e^x - \frac{4}{3}x^{-4/3}$

⑯ $y = x^{3/2} - x^{1/2}$
 $y' = \frac{3}{2}x^{1/2} - \frac{1}{2}x^{-1/2}$

⑰ $F(x) = \left(\frac{1}{2}x\right)^5 = \frac{1}{32}x^5$
 $F'(x) = \frac{5x^4}{32}$

⑱ $f(x) = 1 - 3x^{-1} + x^{-2}$
 $f'(x) = 3x^{-2} - 2x^{-3}$
 $= \frac{3}{x^2} - \frac{2}{x^3}$

⑲ $y = x^{3/2} + 4x^{1/2} + 3x^{-1/2}$
 $y' = \frac{3}{2}x^{1/2} + 2x^{-1/2} - \frac{3}{2}x^{-3/2}$

⑳ $g(u) = \sqrt{2}u + \sqrt{3}u^{1/2}$
 $g'(u) = \sqrt{2} + \frac{\sqrt{3}}{2\sqrt{u}}$
or $g'(u) = \sqrt{2} + \frac{1}{2}\sqrt{\frac{3}{u}}$

$$\textcircled{21} \begin{aligned} y &= 4\pi^2 \\ y' &= 0 \end{aligned}$$

$$\textcircled{22} y' = ae^v - \frac{b}{v^2} - \frac{2c}{v^3}$$

$$\textcircled{25} \begin{aligned} z &= Ay^{-10} + Be^y \\ z' &= -10Ay^{-11} + Be^y \\ z' &= \frac{-10A}{y^{11}} + Be^y \end{aligned}$$

$$\textcircled{27} \begin{aligned} y &= x^{1/4} \quad (1, 1) \\ y' &= \frac{1}{4} x^{-5/4} \quad \Rightarrow \quad y'(1) = \frac{1}{4} (1)^{-5/4} = \frac{1}{4} = m \end{aligned}$$

$$\begin{aligned} y - 1 &= \frac{1}{4} (x - 1) \\ y &= \frac{1}{4} x + \frac{3}{4} \end{aligned}$$