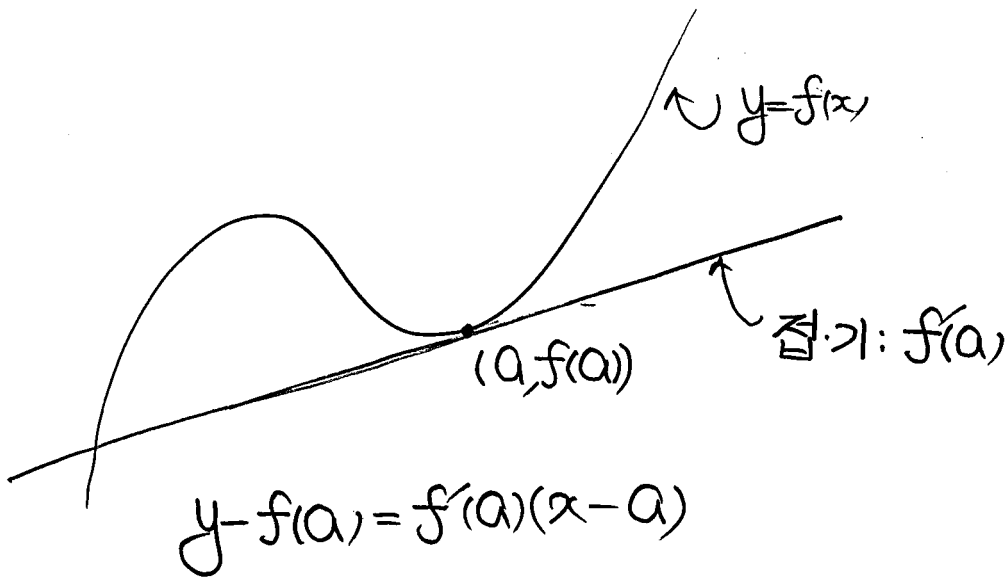


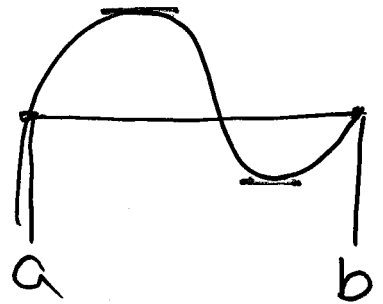
◦ 접선의 방정식



* 평균값의 정리

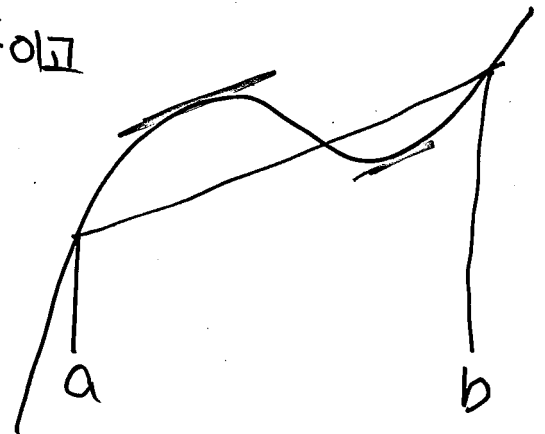
1) 롤의 정리

함수 $f(x)$ 가 닫힌구간 $[a, b]$ 에서 연속이고
 열린구간 (a, b) 에서 미분가능할 때
 $f(a) = f(b)$ 이면 $f'(c) = 0$ 인
 c 가 열린구간 (a, b) 에 적어도 하나 존재한다



2) 평균값의 정리

함수 $f(x)$ 가 닫힌구간 $[a, b]$ 에서 연속이고
 열린구간 (a, b) 에서 미분가능 하면
 $\frac{f(b)-f(a)}{b-a} = f'(c)$ 인 c 가
 열린구간 (a, b) 에
 적어도 하나 존재한다



P131

$$\text{EX)} f(x) = x^3 - 4x \quad \text{점 } (2, 0) \quad \text{기: } f'(2) = 12 - 4 = 8$$

$$f'(x) = 3x^2 - 4$$

$$y - 0 = 8(x - 2) \quad \boxed{\therefore y = 8x - 16}$$

P132

$$\text{EX)} f(x) = x^3 + 2x - 3$$

$$f'(x) = 3x^2 + 2 = 2 \quad \text{점 } (0, -3) \quad \text{기: } f'(0) = 2$$

$$3x^2 = 0$$

$$x = 0, f(0) = -3$$

$$y + 3 = 2(x - 0) \quad \boxed{y = 2x - 3}$$

P133

$$\text{EX)}: f(x) = x^3 - 2x \quad \text{점 } (a, a^3 - 2a), \quad \text{기: } f'(a) = 3a^2 - 2$$

$$f'(x) = 3x^2 - 2$$

$$y - (a^3 - 2a) = (3a^2 - 2)(x - a) \quad \underline{\underline{(0, 2) \text{를 지난다}}}$$

$$2 - a^3 + 2a = -3a^3 + 2a$$

$$2a^3 + 2 = 0$$

$$a^3 + 1 = (a + 1)(a^2 - a + 1) = 0$$

$$a = -1 \quad \hookrightarrow (a - \frac{1}{2})^2 + \frac{3}{4} > 0$$

$$\text{점 } (-1, 1) \quad \text{기: } f'(-1) = 1$$

$$y - 1 = 1 \cdot (x + 1) \quad \boxed{\therefore y = x + 2}$$

11

$$f(x) = x^2 - 2x - 3, \quad f'(x) = 2x - 2$$

$$(1) f'(0) = -2$$

점 (0, -3)

$$y + 3 = -2(x - 0)$$

$$\therefore y = -2x - 3$$

$$(2) \text{ 점 } (2, -3)$$

$$\text{기: } f'(2) = 2$$

$$y + 3 = 2(x - 2)$$

$$\therefore y = 2x - 7$$

$$(3) \text{ 점 } (3, 0)$$

$$\text{기: } f'(3) = 4$$

$$y - 0 = 4(x - 3)$$

$$\therefore y = 4x - 12$$

21

$$f(x) = 3x^2 - 4x + 4$$

$$f'(x) = 6x - 4$$

$$\text{점 } (1, 3)$$

$$\text{기: } f'(1) = 2$$

$$\text{수기: } -\frac{1}{2}$$

$$y - 3 = -\frac{1}{2}(x - 1)$$

$$\therefore y = -\frac{1}{2}x + \frac{7}{2}$$

31

$$f(x) = 2x^2 - 2x + 1$$

$$f'(x) = 4x - 2 = -2$$

$$x = 0; f(0) = 1$$

$$\text{점 } (0, 1)$$

$$\text{기: } f'(0) = -2$$

$$y - 1 = -2(x - 0)$$

$$\therefore y = -2x + 1$$

$$(4) f(x) = x^2 - x \quad \text{점 } (a, a^2 - a) \quad \text{기: } f'(a) = 2a - 1$$

$$f'(x) = 2x - 1$$

$$y - (a^2 - a) = (2a - 1)(x - a) \quad \underline{(1, -1) \text{를 지난다}}$$

$$-1 - a^2 + a = 2a - 1 - 2a^2 + a$$

$$a^2 - 2a = 0$$

$$a(a - 2) = 0 \quad a = 0 \text{ 또는 } a = 2$$

$$\textcircled{7} a = 0; \text{ 점 } (0, 0), \text{ 기: } f'(0) = -1$$

$$y - 0 = -1 \cdot (x - 0)$$

$$\boxed{\therefore y = -x}$$

$$\textcircled{8} a = 2; \text{ 점 } (2, 2), \text{ 기: } f'(2) = 3$$

$$y - 2 = 3(x - 2)$$

$$\boxed{\therefore y = 3x - 4}$$

P137

1-11

$$(1) f(x) = -2x^2 + 5x - 2$$

$$f'(x) = -4x + 5$$

$$\text{점 } (1, 1)$$

$$\text{기: } f'(1) = 1$$

$$y - 1 = 1 \cdot (x - 1)$$

$$\boxed{\therefore y = x}$$

$$(2) f(x) = x^3 - 2x + 1$$

$$f'(x) = 3x^2 - 2$$

$$\text{점 } (1, 0)$$

$$\text{기: } f'(1) = 1$$

$$y - 0 = 1 \cdot (x - 1)$$

$$\boxed{\therefore y = x - 1}$$