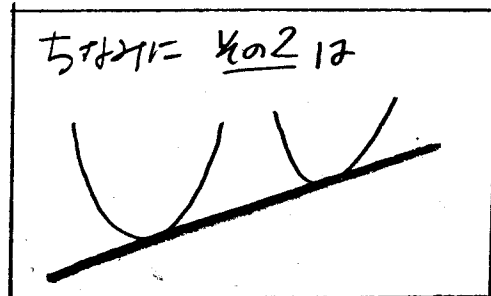
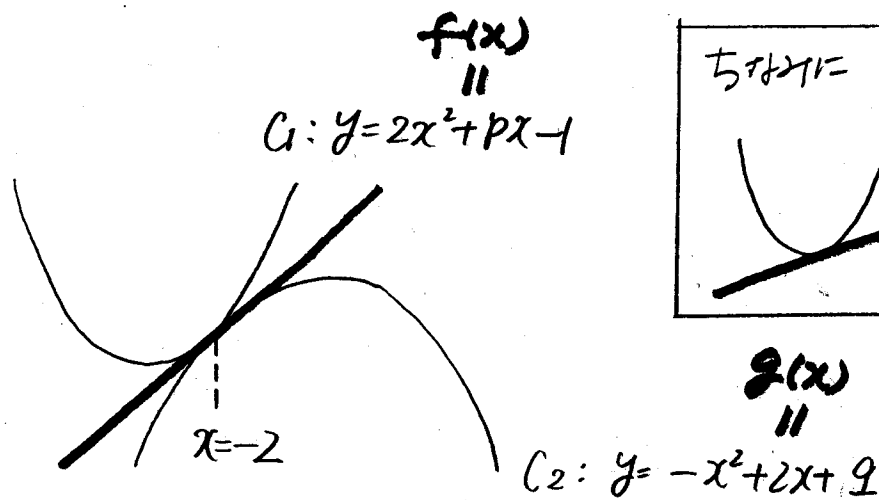


[80]



共通接線 その1

- <ポイント>
- ① $x = -2$ のときの y の値が一致。
 - ② $x = -2$ での接線の傾きが一致。

① $f(-2) = g(-2)$ だから

$$8 - 2p - 1 = -4 - 4 + 9$$

$$-2p + 9 = 15$$

② $f'(x) = 4x + p$, $g'(x) = -2x + 2$

$f'(-2) = g'(-2)$ だから

$$-8 + p = 4 + 2$$

$$p = 14$$

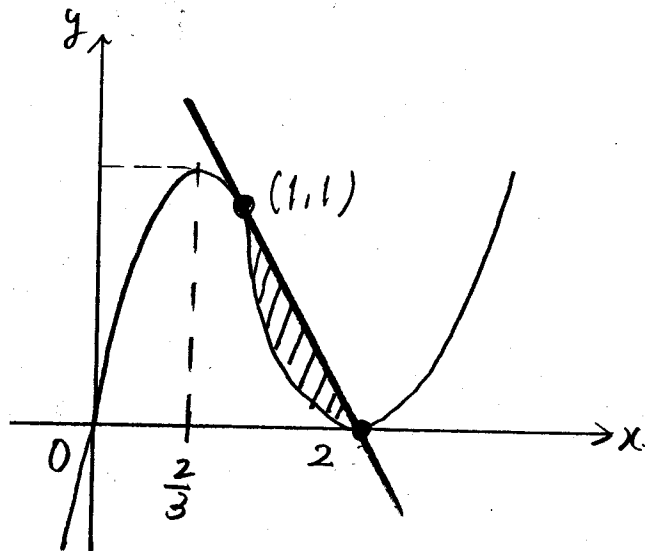
①, ② より $p = 14$, $q = -13$

[85] $y = x^3 - 4x^2 + 4x (= x(x-2)^2)$

$$y' = 3x^2 - 8x + 4$$

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

x	...	$\frac{2}{3}$...	2	...
y'	+	0	-	0	+
y	↗ 極大		↘ 極小		↗



接点 (1,1)

$$y' = 3x^2 - 8x + 4$$

↓ $x=1$ 代入

(負?) -1

接線は $y-1 = -(x-1)$

$$y = -x + 2$$

↑
(2,0) を通る!!

$$S = \int_1^2 \{-x + 2 - (x^3 - 4x^2 + 4x)\} dx$$

$$= \int_1^2 (-x^3 + 4x^2 - 5x + 2) dx$$

$$= -\frac{1}{4} [x^4]_1^2 + \frac{4}{3} [x^3]_1^2 - \frac{5}{2} [x^2]_1^2 + 2 [x]_1^2$$

$$= -\frac{1}{4} (16-1) + \frac{4}{3} (8-1) - \frac{5}{2} (4-1) + 2(2-1)$$

$$= -\frac{15}{4} + \frac{28}{3} - \frac{15}{2} + 2$$

$$= \frac{-45 + 112 - 90 + 24}{12} = \frac{1}{12}$$

[86]

$$C: y = x^2$$

$$l: y = m(x-1) + 2$$

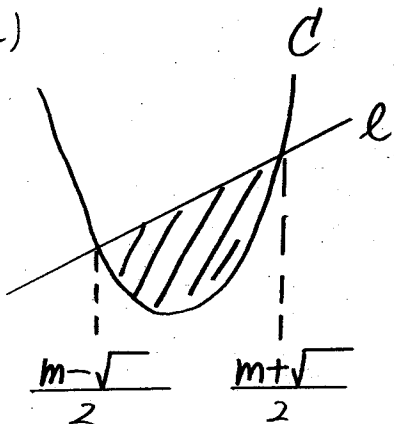
傾き m , $(1, 2)$ を通る

$$(1) \quad x^2 = m(x-1) + 2$$

$$x^2 - mx + m - 2 = 0$$

$$x = \frac{m \pm \sqrt{m^2 - 4m + 8}}{2}$$

(2)



$$S = \frac{1}{6} \left(\frac{m + \sqrt{\quad}}{2} - \frac{m - \sqrt{\quad}}{2} \right)^3$$

$$= \frac{1}{6} (\sqrt{m^2 - 4m + 8})^3$$

(3)

$$S = \frac{1}{6} (\sqrt{(m-2)^2 + 4})^3$$

$$\underline{m=2}, \text{ のとき}$$

$$\text{Min } \frac{1}{6} (\sqrt{4})^3 = \frac{1}{6} \times 2^3 = \underline{\underline{\frac{4}{3}}}$$