

§1.2.2

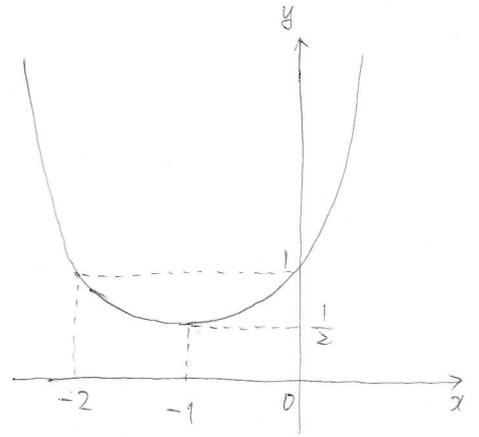
問題A

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

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

$f''(x) = 1$

$x$	...	-1	...
$f'(x)$	-	0	+
$f''(x)$	+	+	+
$f(x)$	↪	$\frac{1}{2}$	↗

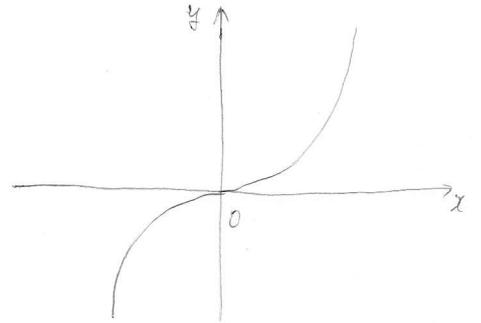


② (1)  $f(x) = \frac{x^3}{6} + x$

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

$f''(x) = x$

$x$	...	0	...
$f'(x)$	+	+	+
$f''(x)$	-	0	+
$f(x)$	↖	0	↗

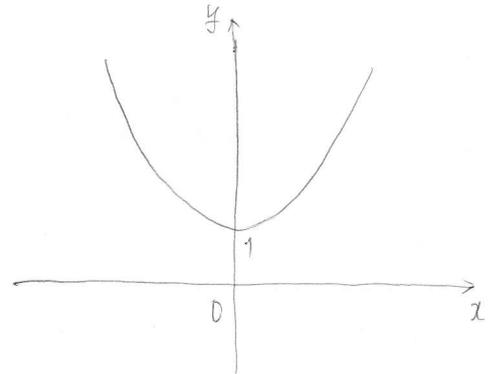


(2)  $f(x) = \frac{x^4}{24} + \frac{x^2}{2} + 1$

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

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

$x$	...	0	...
$f'(x)$	-	0	+
$f''(x)$	+	+	+
$f(x)$	↪	1	↗

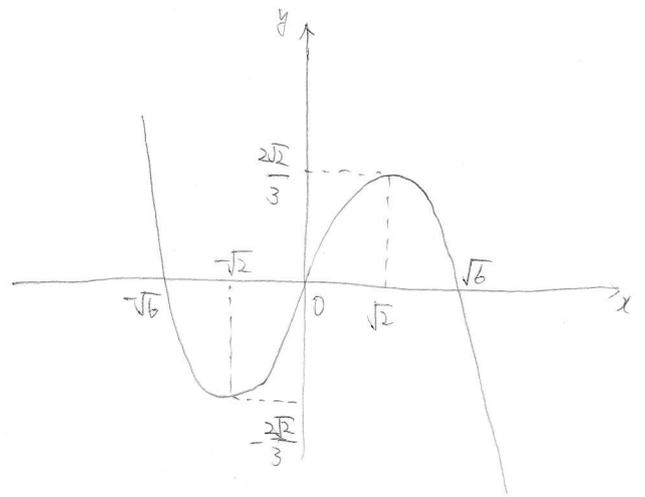


$$(3) f(x) = -\frac{x^3}{6} + x$$

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

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

$x$	...	$-\sqrt{2}$	...	0	...	$\sqrt{2}$	...
$f'(x)$	-	0	+	+	+	0	-
$f''(x)$	+	+	+	0	-	-	-
$f(x)$	$\searrow$	$-\frac{2\sqrt{2}}{3}$	$\nearrow$	0	$\nearrow$	$\frac{2\sqrt{2}}{3}$	$\searrow$



$$(4) f(x) = \frac{x^4}{24} - \frac{x^2}{2} + 1$$

$$f'(x) = \frac{x^3}{6} - x$$

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

$x$	...	$-\sqrt{6}$	...	$-\sqrt{2}$	...	0	...	$\sqrt{2}$	...	$\sqrt{6}$	...
$f'(x)$	-	0	+	+	+	0	-	-	-	0	+
$f''(x)$	+	+	+	0	-	-	-	0	+	+	+
$f(x)$	$\searrow$	$-\frac{1}{2}$	$\nearrow$	$\frac{1}{6}$	$\nearrow$	1	$\searrow$	$\frac{1}{6}$	$\searrow$	$-\frac{1}{2}$	$\nearrow$

