

④ $g(x) = (x^2 - 2)e^x$; $g' = (x^2 + 2x - 2)e^x$, $g'' = (x^2 + 4x)e^x$

I $g(x)$ is defined everywhere ~~for all $x \in \mathbb{R}$~~

$g(0) = -2$, $g(x) = 0$ when $x = \pm\sqrt{2} \approx 1.4$.

No symmetry, $\lim_{x \rightarrow -\infty} g(x) = 0$ (from hint!).

II $g'(x) = 0$ when $x = -1 \pm \sqrt{3}$ ($x = -2.7, 0.7$)

g'	+	-	+
g	↗	-2.7 ↘	0.7 ↗

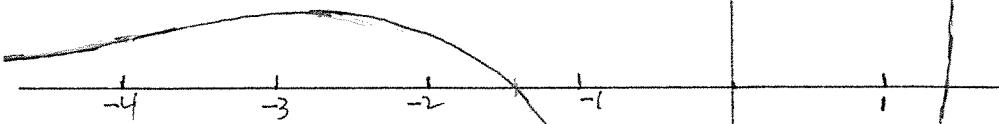
III g has a local max at $-1 - \sqrt{3}$; a local min at $-1 + \sqrt{3}$.

$g''(x) = 0$ when $x = 0$ or $x = -4$

g''	+	-	+	+
g	↙	-4 ↗	0 ↘	↗

g has inflection points at $x = -4, 0$.

x	$(-\infty)$	-4	$-1 - \sqrt{3}$	$-\sqrt{2}$	-1.4	0	$-1 + \sqrt{3}$	$\sqrt{2}$	1.4	1.5
g	(0)	.26	.36	0	-2	-3	0	1.12		
limit	inf.	max			intl.	min				



$y = (x^2 - 2)e^x$