D $g(x) = e^{1-2x^2}$; $g' = -4xe^{1-2x^2}$; $g'' = 4(4x^2-1)e^{1-2x^2}$

I g is defined everywhere; $g(x) > 0$, and as $1-2x^2 \le 1$, $g(x) \le e^1 = e$. $g(0) = e$ so g has an absolute max. at 0
g is symmetric and $\lim_{x \to \pm\infty} g(x) = 0$ (since $1-2x^2 \to -\infty$)
The x-axis is a horizontal asymptote

II $g'(x) = 0$ when $x = 0$

g'	+	0	−
g	↗		↘

g has an max at $x = 0$

III $g''(x) = 0$ when $x = \pm \frac{1}{2}$

g''	+	$-\frac{1}{2}$	−	$\frac{1}{2}$	+
g	∪		∩		∪

g has inflection points at $x = \pm \frac{1}{2}$

IV

x	0	$\pm 1/2$	± 1	± 2
$g(x)$	e ≈ 2.7 abs. max	1.6	.37	.0009