

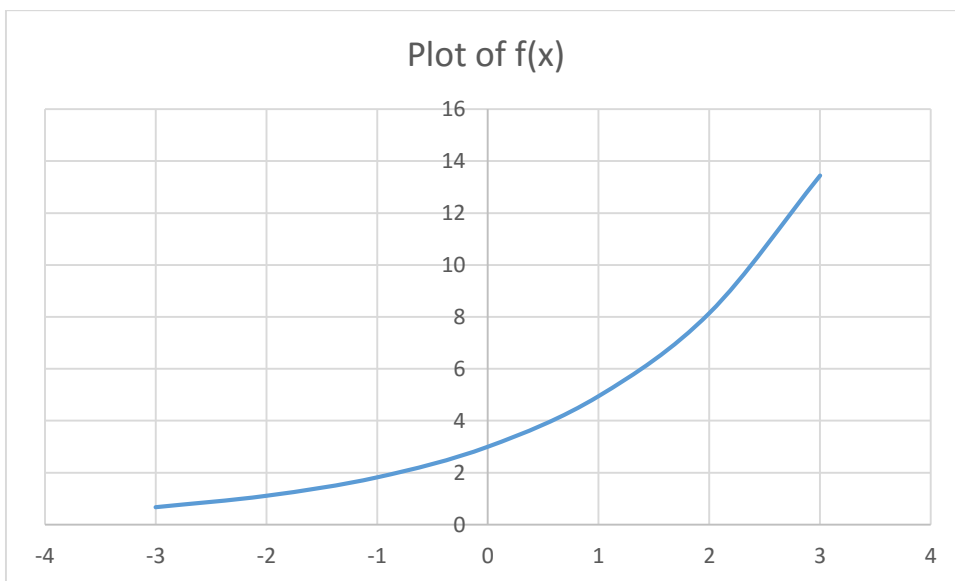
Answer on Question #57171 – Math – Calculus

Which functions in the table below give values that could not come from exponential functions?

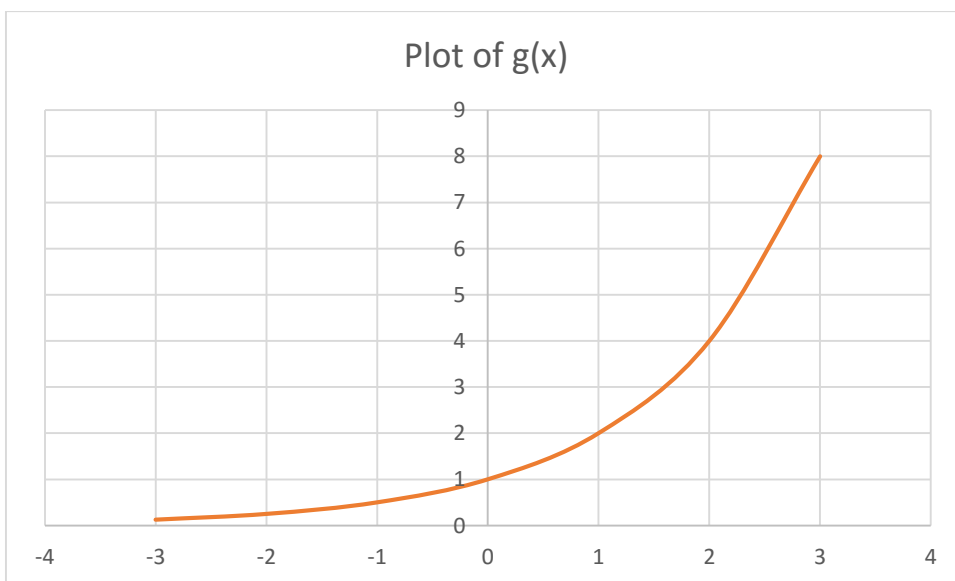
x	-3	-2	-1	0	1	2	3
f(x)	0.67	1.11	1.82	3	4.95	8.15	13.45
g(x)	0.125	0.25	0.5	1	2	4	8
h(x)	0.25	0.5	0.75	1	1.25	1.5	1.75
k(x)	64	16	4	0	0.25	0.0625	0.0156

Solution

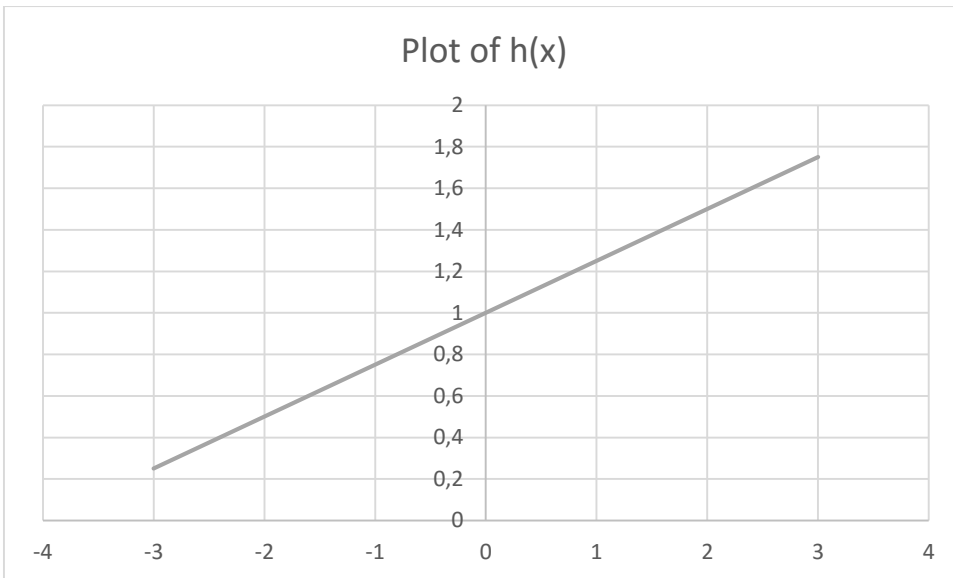
The function f(x) is exponential, its approximation is $f(x) = 3e^{0.5x}$ (approximation error does not exceed 0,007).



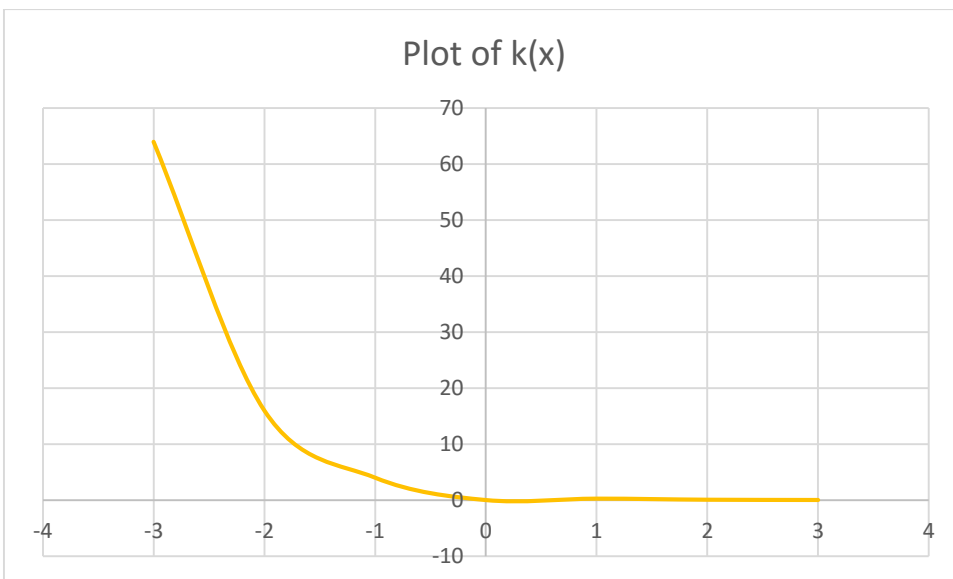
$g(x) = 2^x$ is exponential;



$h(x) = 0.25x + 1$ is linear;



The function $k(x)$ is not exponential, because an exponential function is strictly monotonic (either increasing for all x or decreasing for all x), but the function $k(x)$ is decreasing on $-1 \leq x \leq 0$, $1 \leq x \leq 2$, the function $k(x)$ is increasing on $0 \leq x \leq 1$.



Maybe there is a mistake in the description of $k(x)$. If values of $k(x)$ were

-3	-2	-1	0	1	2	3
64	16	4	1	0.25	0.0625	0.0156,

$k(x) = \frac{1}{4^x}$ would be exponential.

Answer: $h(x)$, $k(x)$.