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1. (4 points) Find derivatives of each of the following functions.

(a) $f(x) = (3x + 2) \cdot 3^x$ (b) $z(y) = \sqrt{y^5 - e} - \sin(2)$ (c) $g(\theta) = \frac{4}{e^{7\theta}}$ (d) $r(t) = \pi 4^{(t+1)/t}$

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2. (2 points) The following table gives values for $f(x)$, $f'(x)$, $g(x)$, and $g'(x)$ at different values of x . If $h(x) = g(f(x))$, find $h'(2)$. Be sure that it is clear how you obtain your answer (simply writing something like “8” will get no credit).

$x =$	-2	-1	0	1	2
$f(x) =$	2	0	1	-2	-1
$f'(x) =$	-1	1	2	0	-2
$g(x) =$	1	2	-2	-1	0
$g'(x) =$	0	-2	-1	2	1

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3. (2 points) For what values of x is the *derivative* of the function $p(x) = x \cdot 3^x$ *decreasing*?