MA 16010: Applied Calculus 1 Quiz 3 Wed., June 22, 2022

Please show **all** your work! Answers without supporting work will not be given credit. Write answers in spaces provided.

Name:_____

1. **[3 pts]** The derivative of a function is found by

$$f'(x) = \lim_{h\to 0} \frac{\frac{3\sin(x+h)}{\sqrt{x+h}} - \frac{3\sin x}{\sqrt{x}}}{h}$$

What is $f(x)$?

$f(x)$=_____

2. Find the derivative of the following functions:
   (a) **[1 pt]** $f(x) = 3e^x$
   (b) **[1 pt]** $g(x) = 7\cos(x)$

$f'(x)$=_____ $g'(x)$=_____

   (c) **[3 pts]** $h(x) = \sqrt[3]{x^2} + \dfrac{3}{x^4} - x$

$h'(x)$=_____

3. **[4 pts]** Let $w(x) = 4\sin x \left(\sqrt[3]{x^2} + \dfrac{3}{x^4} - x\right)$. Find $w'(x)$. **(Don't Simplify.)**

$w'(x)$ =_____