

Written HW22 – MATH 2502 Fall 2021

**Due by 5 November for timely completion credit**

Find the first three nonzero terms of the Taylor series of the given function  $f(x)$ , centered at the given point  $c$ .

1.  $f(x) = \frac{1}{x}$ ,  $c = 8$

2.  $f(x) = 2^x$ ,  $c = 1$  (*hint: recall that  $\frac{d}{dx}2^x = \ln(2)2^x$  and  $\ln(2) \approx 0.693$  – no “ $\ln(2)$ ” should remain in any term*)

3.  $f(x) = \cos(x) \sin(x)$ ,  $c = \frac{\pi}{4}$  (*note: evaluate the derivatives using elementary trigonometry for perfect answers in terms of square roots/etc for full credit*)