

MA 2733

Worksheet 1 – August 21, 2014

Name _____

1. Calculate the following derivatives:

(a) $\frac{d}{dx} e^{x \sin x^2}$.

(b) $\frac{d}{dx} e^{x \sin^2 x}$.

2. Calculate the following limits:

(a) $\lim_{x \rightarrow \infty} \frac{x^3 - 20x + 17}{20x^2 + 3x + 2}$

(b) $\lim_{x \rightarrow \infty} \frac{\ln x}{\sqrt{x}}$

(c) $\lim_{x \rightarrow \infty} \frac{2^x + 1}{x + 2^{x+1}}$

(d) $\lim_{x \rightarrow \infty} \frac{\sin e^x}{x^2}$

3. (a) What curve is represented by the parametric equation $x = 2 \sin \theta$, $y = 3 \cos \theta$ for θ on $[0, 2\pi)$?

(b) Find the equation of the tangent line to the above parametric curve at $\theta = \pi/2$, $\theta = \pi/3$, $\theta = \pi/4$, and $\theta = 0$.