MA 141 Reading Assignment 18–Sec 3.5

(1) State the chain rule.

(2) In using the chain rule, do we work inside to outside or outside to inside? (Do we differentiate the inner or outer first?)

(3) State the power rule combined with the chain rule.

(4) What is $\frac{d}{dx}(a^x)$ equal to?

(5) What is the derivative of $f \circ g \circ h(x)$?

(6) How do we compute the derivative of a parametric curve given by $x = f(t)$ and $y = g(t)$?

MA 141 Reading Assignment 19–Sec 3.6

(1) What is meant by implicit differentiation?

(2) Why do we use implicit differentiation?

(3) When are two curves orthogonal?

(4) Define orthogonal trajectories.

(5) State the derivatives of $\sin^{-1}(x)$ and $\tan^{-1}(x)$.

(6) Choose either $\sin^{-1}(x)$ or $\tan^{-1}(x)$ and show how the derivative is obtained, following the book for guidance.

MA 141 Reading Assignment 20–Sec 3.7

(1) Sate the derivative of $\log_a(x)$ and $\ln x$ and $\ln(g(x))$ for some function $g(x)$.

(2) Write down the steps involved in logarithmic differentiation.

(3) Why do we use logarithmic differentiation?

(4) State the 4 cases for exponents and bases. (Note: always keep track of where the variable is when differentiating equations with exponents!)

(5) Define e as a limit.

MA 141 Reading Assignment 20–Sec 3.8

(1) In words and in mathematical symbols, define linear approximation.

(2) Define linearization.

(3) Choose one of Examples 1 or 2 and describe the solution in your own words.

(4) Name some applications of linear approximation to physics.

(5) What is an application of the use of differentials?