

MAPLE PROJECT 3
Implicit differentiation and Limits
Due April 14, 2006

1. Find the equation of the tangent line (in slope intercept form) to the graph of

$$xy^4 + 2y^3 = 14x + 18 \quad \text{at} \quad x = 1, y = 2$$

- (a) find $\frac{dy}{dx}$ using implicit differentiation
 - (b) find slope of the tangent line at $x = 1$
 - (c) find the equation of the tangent line.
2. Evaluate each limit at infinity in two ways:
- (a) Use Maple's "limit" command.
 - (b) Use numerical(table) approach.

Hint : For part (b) use the "largepos" codes given in the maple manual.

- (i) $\lim_{x \rightarrow \infty} (1 + \frac{1}{x})^x$
- (ii) $\lim_{x \rightarrow \infty} (\sqrt{x + \sqrt{x + \sqrt{x}}} - \sqrt{x})$