BC 3 Series 6 Name:_____

Error with e

(Assume we know $e < 3$, $e^2 < 9$, etc.)

(1) If terms through $n = 8$ are used to approximate e^2, find an upper bound for the error.

(2) Approximate e with an error less than 0.0001. How many terms are necessary?

(3) To use $1 + x + \frac{x^2}{2}$ to approximate e^x with an error less than 0.05, and we know $|x| < 1$, what values of x can be used?

(4) If terms through $n = 6$ are used to approximate $e^{3/2}$, find the error.

(5) To approximate $e^{9/10}$ with an error less than 0.005, how many terms are necessary?