QUIZ 9 - MATH 152 Friday, November 16

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Read each problem **very carefully** before starting to solve it. Each problem is worth 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

Recall that in class we derived the following series formulas (for appropriate convergence intervals):

$$\frac{1}{1-x}=\sum_{n=0}^{\infty}x^n, \qquad \cos x=\sum_{n=0}^{\infty}\frac{(-1)^n}{(2n)!}x^{2n}, \qquad (1+x)^k=\sum_{n=0}^{\infty}\binom{k}{n}x^n.$$

1. Evaluate the indefinite integral $\displaystyle\int\frac{x-\tan^{-1}x}{x^3}\mathrm{d}x$ as a power series.

2. Obtain a Maclaurin series for the function $f(x)=x\cos 2x$.

3. Expand the function $\dfrac{1}{(2+x)^3}$ as a power series.