Math 1B, Quiz 7

Monday, March 16

1. (1 pt each) Give power series representations for the following functions (centered at $x = 0$) up and including the x^3 term.

   (a) e^{2x}

   (b) $\dfrac{1}{1+x}$

2. (3 pts) A power series centered at $x = 5$ converges at $x = 2$ and diverges at $x = 10$. For each of the following points state whether the series converges or diverges at that point, or whether there is not enough information to tell.

   (a) $x = -1$

   (b) $x = 1$

   (c) $x = 7$

   (d) $x = 8$

   (e) $x = 9$

   (f) $x = 11$

3. (3 pts) Find the interval of convergence of the power series $\displaystyle\sum_{n=1}^{\infty} \frac{(x-2)^n}{n^2 \cdot 3^n}$. Show your work.

4. (3 pts) Find the interval of convergence of the power series $\displaystyle\sum_{n=1}^{\infty} \frac{(3-2x)^n}{n}$. Show your work.

Extra Credit

Give as many terms as you can of the Taylor series for $\cos^2(x) + \sin^2(x)$ centered at $x = 0$ (0.1 pt per term, max. 0.5 pts).