Calc II Problem sheet

Tuesday, July 13

1. Express
$$\int x^2 \cos(x^2)\, dx$$
as a power series.

2. Determine power series representations for
   (a) $f(x) = \sin(\pi x)$ and
   (b) $g(x) = 1/(1 - x/2)$

   Determine the interval of convergence in both cases.

3. Find simple function, expressed in finite terms, that is equivalent to
$$\sum_{n=1}^{\infty} nx^n$$
over it's domain of convergence. Use your forumula to compute
$$\sum_{n=1}^{\infty} \frac{n}{2^n}.$$

4. Find a power series representation of
$$f(x) = \frac{x}{2+x}.$$