

Workshop and homework

	11.8	39
Homework:	11.9	3,5,13,37
	11.10	5,15,23,27,39

1 Consider the function defined by

$$f(x) = \sum_{n=0}^{\infty} (-1)^n \frac{x^{2n}}{n!} = 1 - x^2 + \frac{x^4}{2} - \dots$$

(remember that $0! = 1$).

- Determine the interval of convergence; this is the domain of f .
- Write out several terms of the series and verify that $f'(x) = -2xf(x)$ (for all x in the interior of the interval of convergence).
- Show that $y = f(x)$ is a solution to the initial value problem

$$y' = -2xy \quad y(0) = 1$$

- Solve this initial value problem, thereby obtaining a formula for $f(x)$ in terms of functions found on your calculator.