The general sol$^{\underline{n}}$ is given by

$$y = c_1\left(1 + x^2 + \tfrac{1}{2}x^4 + \cdots\right)$$
$$\quad + c_2\left(x + \tfrac{2}{3}x^3 + \tfrac{4}{15}x^5 + \cdots\right)$$

for any constants c_1, c_2.

(b) Repeat problem but find a general formula for the coefficients.

$$y = \sum_{n=0}^{\infty} a_n x^n.$$

We found $a_{n+2} = \dfrac{2a_n}{n+2}$ for $n \geq 0$.

~~For any, a_0, a_1.~~

$$a_2 = a_0$$
$$a_3 = \frac{2}{3}a_1$$
$$a_4 = \frac{2}{4}a_2 = \frac{1}{2}a_0$$
$$a_5 = \frac{2}{5}a_3 = \frac{2}{5}\cdot\frac{2}{3}\cdot a_1$$
$$a_6 = \frac{2}{6}a_4 = \frac{1}{3}\cdot\frac{1}{2}\cdot a_0$$
$$a_7 = \frac{2}{7}a_5 = \frac{2}{7}\cdot\frac{2}{5}\cdot\frac{2}{3}\cdot a_1$$
$$a_8 = \frac{2}{8}a_6 = \frac{1}{4}\cdot\frac{1}{3}\cdot\frac{1}{2}\cdot a_0$$