Section 4.1 #11 Maple work.

$with(LinearAlgebra):$
$with(VectorCalculus):$
$Wronskian\left(\left[x^{-\frac{1}{2}}, x^{-1}\right], x, 'determinant'\right)$

$$\begin{bmatrix} \frac{1}{\sqrt{x}} & \frac{1}{x} \\ -\frac{1}{2\,x^{3/2}} & -\frac{1}{x^2} \end{bmatrix}, -\frac{1}{2\,x^{5/2}} \quad \mathbf{(1)}$$

This is never zero and it's always continuous on its domain. The given interval is {x | x > 0}, and both things are true on that interval, so linear INdependence is proved.

I don't want to check if they're solutions of the homogeneous mess of an equation. Not by hand. But it's easy to check with Maple!

This if *f*:

$f := x \rightarrow c1 \cdot x^{-\frac{1}{2}} + c2 \cdot x^{-1}$

$$f := x \mapsto c1 \cdot x^{-2^{-1}} + c2 \cdot \frac{1}{x} \quad \mathbf{(2)}$$

This is *f* ':

$fp := \mathrm{D}(f)$

$$fp := x \mapsto -\frac{c1}{2 \cdot x^{3/2}} - \frac{c2}{x^2} \quad \mathbf{(3)}$$

$fpp := \mathrm{D}(fp)$

$$fpp := x \mapsto \frac{3 \cdot c1}{4 \cdot x^{5/2}} + \frac{2 \cdot c2}{x^3} \quad \mathbf{(4)}$$

$2 \cdot x^2 \cdot fpp(x) + 5 \cdot x \cdot fp(x) + f(x)$

$$2\,x^2 \left(\frac{3\,c1}{4\,x^{5/2}} + \frac{2\,c2}{x^3}\right) + 5\,x\left(-\frac{c1}{2\,x^{3/2}} - \frac{c2}{x^2}\right) + \frac{c1}{\sqrt{x}} + \frac{c2}{x} \quad \mathbf{(5)}$$

$simplify(\%)$

$$0 \quad \mathbf{(6)}$$