WRITE YOUR NAME:

MAP 2302 Quiz 8
Tuesday October 1st

Find two linearly independent solutions of the differential equation that do not involve complex numbers.

$$y'' - 6y' + 13y = 0$$

Auxiliary eqn:
$$r^2 - 6r + 13 = 0$$
$$r^2 - 6r + 9 = -4$$
$$(r-3)^2 = -4$$
$$r - 3 = \pm\sqrt{-4} = \pm 2i$$
$$r = 3 \pm 2i \qquad \alpha = 3, \; \beta = 2$$

So we know two independent real-valued solutions

are $\quad y = e^{3t} \cos 2t \quad$ and $\quad y = e^{3t} \sin 2t$