15.39

lördag 24 december 2022 14:32

a) $r^2 + 4 = 0 \qquad r = 0 \pm \sqrt{-4} = \pm 2i$

$y = e^x(A\cos 2x + B \sin 2x)$

$y(0) = 0 \quad A = 0$

$y(0) = (A\cos 0 + B \sin 0)$

$A \cdot 1 = 0 \qquad B \cdot 0 = 0$

$A = 0$

Sv: $y = B \sin 2x$

$y(\pi/2) = e^{\pi/2}(A\cos \pi + B \sin \pi)$

$A \cdot (-1) = 0 \qquad B \cdot 0 = 0$

$A = 0$

b) $r^2 + 4 = 0 \qquad r = \pm 2i$

$y = A\cos 2x + B \sin 2x$

$y' = -2A \sin 2x + 2B\cos 2x$

$y'(0) = -2A \sin 0 + 2B\cos 0 = 2B = 0 \qquad B = 0$

$0 \qquad 1$

$y'(\pi/2) - 2A \sin \pi + 2B\cos \pi = -2B = 0 \qquad B = 0$

$0 \qquad -1$

Sv: $y = A\cos 2x$