

You will have twenty minutes to take this quiz. Read the instructions carefully. There are more questions on the back of this page.

1. (4 points) *You do not need to show your work. Only the answer will be graded.*

For each of the following, circle true or false:

$(x + x^3)^3 = o(x^3)$	True	False
$\cos(x^2) - 1 = o(x^3)$	True	False
$e^x - 1 = o(x)$	True	False
$\sin(x) - x = o(x^2)$	True	False

2. (6 points) Show your work. Partial credit may be awarded.
Suppose that $y(x)$ is a solution to

$$\begin{aligned}0 &= y''(x) + y(x) + 3x \\ y(0) &= 2 \quad y'(0) = 3.\end{aligned}$$

Compute the degree three Taylor polynomial of $y(x)$ around zero.