MA 16010 Quiz 4 (Lessons 7–9)

Write your name, section number (399 for 8:30, 418 for 9:30), and quiz number on the top of your quiz, **front and back.**

You may use a one–line calculator.

1. Compute the derivative $f'(x)$ when

$$f(x) = x^2 \cos(x) + 3e^x \ .$$

2. A particle is moving in a particular direction, and its position function (in meters, depending on time t in seconds) is

$$s(t) = -t^2 + 7t + 4.$$

Find its velocity ("speed") function $v(t)$.

1. $f'(x) = \underbrace{2x\cos x + x^2(-\sin x)}_{\text{product rule}} + \underbrace{3 \cdot e^x}_{\text{constant multiple rule, } \frac{d}{dx}[e^x] = e^x}$

$= 2x\cos x - x^2 \sin x + 3e^x$

2. $v(t) = \frac{ds}{dt} = -2t + 7$