Math 241 Fall 2018 Professor MG
Classwork 4 Name: _____

Show all work and circle/box your final answer. All answers must be simplified unless stated otherwise.

1. (*0 points*) Find the derivative of the following functions: (You do not need to simplify)

(a) $g(t) = \tan^4\left(\frac{t}{12}\right)$

(b) $f(x) = \frac{1}{x}\sin^{-5} x - \frac{x}{3}\cos^3 x$

(c) $f(x) = \frac{(2x+3)}{(4x+5)^7}$

(d) $f(x) = \sqrt{\sin(2x)}$

(e) $g(t) = \sin\left(\frac{t}{\sqrt{t+1}}\right)$

2. (*0 points*) Find the equation of the line tangent and the line normal to $y^2 - xy = 3x^3y^4 + x^2 + 4$ at the point $(0, 2)$

3. (*0 points*) $s = 6t - t^2$, $0 \le t \le 6$ gives the position of a body moving on a coordinate line, with s in meters and t in seconds.

(a) Find the body's displacement and average velocity for the given time interval.

(b) Find the body's speed and acceleration at the endpoints of the interval.

(c) When, if ever, during the interval does the body change direction?

(d) Find the total distance travelled by the body during the interval.