

Math 2250 HW #6

Due 1:25 PM Friday, September 23

Reading: Hass §3.4–3.5

Problems: Do the assignment “HW6” on WebWork. In addition, write up solutions to the following two problems and hand in your solutions in class on Friday.

1. Let

$$s = \frac{t}{2t + 1}$$

Using the *definition* of the derivative (i.e. no quotient rule, no power rule), compute $\frac{ds}{dt}$.

2. Consider the curve $y = x^3 - 4x + 1$.

- (a) Find an equation for the line perpendicular to the curve (i.e., perpendicular to the tangent line to the curve) at the point $(2, 1)$. (Recall that perpendicular lines have negative reciprocal slopes.)
- (b) Considering all points on the curve, which has the tangent line with the smallest slope?
- (c) Find the equations for the tangent lines to the curve at all points where the slope of the tangent line is 8.