

Math 1510 Tutorial #4

I. Find the derivative of the function (you don't need to simplify your answer):

(a) $y(x) = x^5 - 7x^2 + 10x + 9$,

(b) $f(t) = \sqrt[4]{t} + \sqrt[3]{t}$,

(c) $f(x) = \frac{5x^3 - 3\sqrt{x} + 1}{2x\sqrt{x}}$,

(d) $g(x) = \frac{3x - 1}{1 + x^2}$,

(e) $h(s) = (s^5 - 3s^\pi)(s^2 - 2s - 1)$.

II. Calculate the derivatives indicated:

(a) $g''(1)$ for $g(x) = \frac{x}{x+1}$,

(b) y''' for $y = x^{-9/5}$.

III. A particle is moving along the x -axis so that its position at time $t \geq 0$ seconds is $x(t) = 10t - 5t^2$ meters.

(a) What are the velocity and the acceleration of the particle at any time?

(b) What is the largest x coordinate the particle ever reaches? At what time?

IV. Find $\frac{dy}{dx}$ (you don't need to simplify your answer):

(a) $y = \sqrt{x^2 + \sqrt{x}}$,

(b) $y = (\frac{2x-1}{\sqrt{1-x}} + x)^{30}$.