

Calculus:

Homework
10/23 – 10/27

on: Tuesday: test

due: Wednesday: read pp. 169-172

1. pg. 178 / #21, 24
2. pg. 197 / #69, 71, 73
3. Write an equation of the tangent line to the curve $y = x^2 - 6x + 2$ that is parallel to the line $4x + y = 7$.

Thursday:

1. Write an equation of the normal line to the curve $y = x^2 - 3x + 1$ at the point whose abscissa is 2.
2. Write an equation of the normal line to the curve $y = \frac{2x+3}{x-4}$ at $x = 5$.
3. Let $f(x) = 4x^3 - 3x - 1$.
 - a. Write an equation of the tangent line to f at $x = 2$.
 - b. Write an equation of the normal line to f at $x = -1$.
4. Let f be the function defined by $f(x) = 3x^4 - 9x^2 + 1$.
 - a. State whether f is even or odd. Justify your answer.
 - b. Find $f'(x)$.
 - c. Write an equation of the normal line to the curve at $x = 0$.
5. Write an equation(s) of the tangent line(s) to the curve $y = x^3 + 3x^2 - 24x + 1$ that is (are) parallel to the x-axis.

Friday: read pp. 210-205

1. pg. 211 / #3, find the velocity at $t = 2$
2. pg. 211 / #4, find the acceleration at $t = 2$
3. A particle moves along the x-axis in such a way that its position at time t is given by $x(t) = 3t^4 - 16t^3 + 24t^2$ for $-5 \leq t \leq 5$.
 - a. Determine the velocity of the particle at time t .
 - b. For what values of t is the particle at rest?
 - c. For what values of t does the particle change direction?
 - d. Find the average velocity of the particle on $0 \leq t \leq 2$.

Monday:

1. pg. 211 / #8
2. A particle moves along the x-axis so that its position at time t is $x(t) = (t - 1)(t + 1)^2$. Find the average velocity of the particle on $0 \leq t \leq 2$.
3. A particle moves along the x-axis in such a way that its position at time $t \geq 0$ is given by $x(t) = \frac{1}{3}t^3 - 3t^2 + 8t$.
 - a. Show that at time $t = 0$ the particle is moving to the right.
 - b. Find all values of t for which the particle is moving to the left.
 - c. Find the position, velocity, and acceleration of the particle at time $t = 3$.