Math 241     Exam2 Review
Exam 2 Monday Oct. 13 covers Lectures 8-13
MyMathlab 3.1, 3.2 due Sat. 7:00

**Math 241**

- $z = \frac{3x}{x-1} \quad \frac{dz}{dx} =$
  - (A) $3 \frac{x^2 - x - 1}{(x - 1)^2}$
  - (B) $3 \frac{x^2 + x - 1}{(x - 1)^2}$
  - (C) $-3 \frac{1}{(x - 1)^2}$
  - (D) $\frac{3x}{(x - 1)^2}$ (E) #

- $y = (2 + \sqrt{x})^{10}, \quad \frac{dy}{dx} =$
  - (A) $10(2 + \sqrt{x})^9 \left( \frac{1}{2\sqrt{x}} \right)$
  - (B) $-10(2 + \sqrt{x})^9 \left( \frac{1}{2\sqrt{x}} \right)$
  - (C) $5(2 + \sqrt{x})^9 \left( \frac{1}{2\sqrt{x}} \right)$
  - (D) $5(2 + \sqrt{x})^{11} \left( \frac{1}{2\sqrt{x}} \right)$ (E) #

- $r = \tan(w), \quad w = \frac{1}{\theta}, \quad \frac{dr}{d\theta} =$
  - (A) $\sec^2 \left( \frac{1}{\theta} \right)$
  - (B) $-\sec^2 \left( \frac{1}{\theta} \right)$
  - (C) $-\tan^2 \left( \frac{1}{\theta} \right) \sec(\theta)$
  - (D) $-\frac{\sec^2 \left( \frac{1}{\theta} \right)}{\theta^2}$ (E) #

A rock is thrown upward. Its height at time $t$ is $z = 4t - 4t^2$.
What is its acceleration at time $t$?

When is the rock at maximum height?

What is the rock’s maximum height?

The picture shows an object’s velocity $v$ on the $y$-axis at time $t$.

On what maximal interval of time does the object move upward?

On what interval of time is the velocity decreasing?

On what interval of time is it moving at its greatest speed?

On what interval (of more than one point) of time is the object motionless?

$x = \ln(t), \quad y = e^t$.

(a) Find the slope of the line tangent to this curve when $t = 1$.
  - (A) 0 (B) 1 (C) e (D) d.n.e. (E) #

(b) Find the equation of the tangent line when $t = 1$.
  - (A) $y = x + 1$ (B) $y = ex + 1$ (C) $y = x + e$ (D) $y = ex + e$ (E) #

(c) Find the point on the plane where the tangent is horizontal.
  - (A) (0, 1) (B) (1, 0) (C) (0, e) (D) d.n.e. (E) #