EXAM 1 IS THURSDAY IN QUIZ SECTION

Allowed:

1. A **Ti-30x IIS Calculator**
2. An 8.5 by 11 inch sheet of handwritten notes (front/back)

Notes

1. 4 pages of questions, 50 minutes, use your time effectively.
2. **Show your work using methods from class.**
3. No make-up exams; if you are physically unable to be at the test let me know and your grade will be prorated.

Quick Review

Ch 10-12: Exponential Modeling

- $y = a\, b^x$
  - a = "y-intercept"
  - b = "base" (i.e. multiplier)
    - $0 < b < 1$,   exponential decay
    - $b > 1$,   exponential growth
  - can write $b = e^k$, where $k = \ln(b)$

- Know how to plug-in data and solve for a and b.
- Know how to solve exponential and log equations.
  - $y = e^x$ is the same as $\ln(y) = x$
  - $y = b^x$ is the same as $\log_b(y) = x$

- Important rules
  - $\ln(b^x) = x \ln(b)$
  - $\log_b(y) = \dfrac{\ln(y)}{\ln(b)}$
  - $\ln(ab) = \ln(a) + \ln(b)$

Ch 14: Linear-to-linear modeling

- $y = \dfrac{ax+b}{x+c}$
  - $y = a$ Horizontal asymptote
  - $x = -c$ Vertical asymptote
- Know how to plug-in data and solve for *a*, *b,* and *c*.
- Know what the graph looks like.
- Be comfortable solving equations involving the model.

Ch 8-9: Composition and Inverses

- $f(g(x)), f(f(x)), etc$
- $f^{-1}(f(x)) = x, \quad f(f^{-1}(x)) = x$
- Function & inverse are reflected across y = x.
- Function & inverse have domain and range flipped.
- If a function is NOT one-to-one, then we split up the domain.

Ch 13: Moving Functions around

- $y = f(x)$ and $y = Af(B(x\text{-}C)) + D$

Ch 15-16: Angles and Angular Speed

- 1 revolution = 360 degrees = 2π radians
- 1 revolution distance = $2\pi r$

- Linear speed: $v = \dfrac{\text{dist}}{\text{time}} = \dfrac{s}{t}$
- Angular speed: $\omega = \dfrac{\text{angle}}{\text{time}} = \dfrac{\theta}{t}$

- **If θ is in <u>radians</u>, then**
  - Arc Length = dist = $s = \theta\, r$
  - Area of Wedge = $\dfrac{1}{2}\theta r^2$
  - $v = \omega r$

- Belt and Wheel concepts

  Same belt implies same linear speed

  Same axle implies same angular speed.