

# MATH 150

## Today

1. 7.5 The Fundamental Theorem of Calculus

### Goals:

1. FTC (Understand the FTC and the Net Change Theorem and how to apply them)

## Where is today's material used?

1. Physics (distance traveled, mass of an object, volume of an object, total charge, ...)
2. Economics (interest, marginal revenue/cost/profit to change in revenue/cost/profit, the multiplier effect)
3. Chemistry (physical chemistry)

## FTC

1. **Theorem (FTC)**: If  $f$  is continuous on  $[a, b]$  and  $F$  is any antiderivative of  $f$  on  $[a, b]$ , then

$$\int_a^b f(x)dx = F(b) - F(a).$$

2. **Theorem (NCT)**: If  $f$  is differentiable on  $[a, b]$ , then

$$\int_a^b f'(x)dx = f(b) - f(a).$$

3. Examples. p. 510: 19, 20, 22, 24, 26, 27, 33, 34, 35, 39, 40, 45, 53, 58, 59

## Next Time

1. Begin review for final. Bring questions!