Reminder

- Handouts are due Friday.
- Check WebAssign for online homework.
- Written homework is due Thursday.
- Syllabus last page sign and return by Friday.

Favorite Quotes from the Survey

- “The mac n cheese is fire.”
- “The fried cod at the C4C is to die for.”
- “1 cheeze-it”
- “village center is better than the C4C”
- “idk what c4c is.”

Indefinite Integral Domino Chain

- Get in a group of 4 or 5 and start matching the top half of a domino with the bottom half of another domino.
- Split the work: 5-6 cards per person.
- You will need a scratch paper to work out the integrals.
- They should form a chain; when finished, they become a loop.
- You got 10 minutes.

Daily Quiz

- Go to Socrative.com and complete the quiz.
- Use your full name.
- Room Name: HONG5824

5.5 The Substitution Rule (Review)

Find $\int x^3 \cos(x^4 + 2)\, dx.$

5.5 The Substitution Rule (Review)

Find $\int \frac{x}{\sqrt{1-4x^2}}\,dx.$

5.5 The Substitution Rule (Review)

Two possible substitutions Evaluate $\int \sqrt{2x + 1}\, dx$.

1.

5.5 The Substitution Rule (Review)

Two possible substitutions Evaluate $\int \sqrt{2x + 1}\, dx$.

2.

5.5 Changing Boundary Values for the u-Substitution

5 The Substitution Rule for Definite Integrals If g' is continuous on $[a, b]$ and f is continuous on the range of $u = g(x)$, then

$$\int_a^b f(g(x))g'(x)\,dx = \int_{g(a)}^{g(b)} f(u)\,du$$

5.5 Changing Boundaries

Evaluate $\int_0^4 \sqrt{2x+1}\,dx$

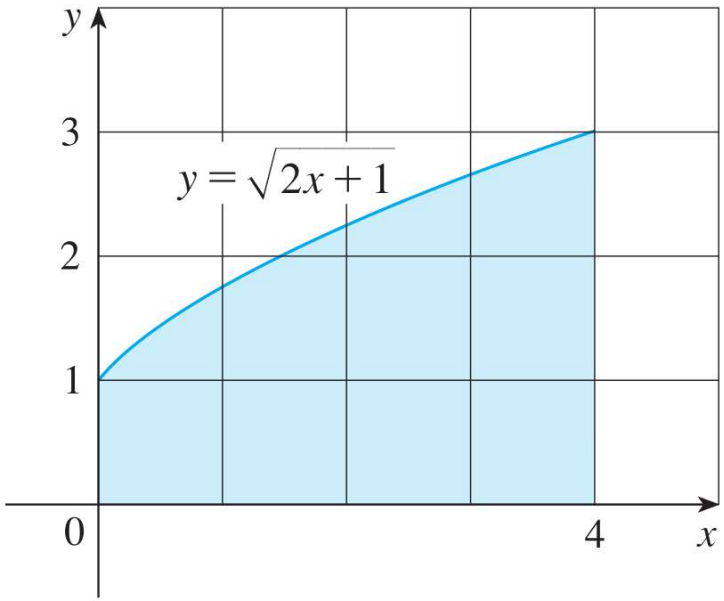
5.5 Changing Boundaries

Evaluate $\int_0^4 \sqrt{2x+1}\,dx$

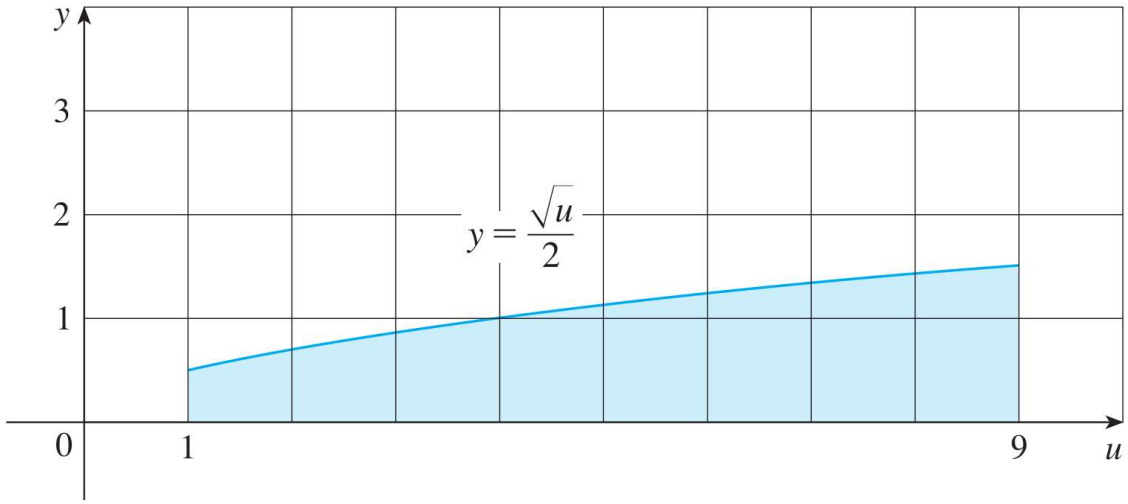
5.5 Visualizing the u-Substitution

When we change a variable, we shrink or stretch the region of integration based of the relation between du and dx.

$$\int_0^4 \sqrt{2x+1}\, dx$$



$$\int_1^9 \frac{\sqrt{u}}{2}\, du$$



5.5 Changing Boundaries

Evaluate $\int_1^2 \frac{dx}{(3-5x)^2}$.

5.5 Changing Boundaries

Calculate $\int_1^e \frac{\ln x}{x}\,dx.$

5.6 Integration by Parts Is Product Rule in Reverse

5.6 Integration by Parts

$$\int f(x)g'(x)\,dx = f(x)g(x) - \int g(x)f'(x)\,dx$$

$$\int u\,dv = uv - \int v\,du$$

5.6 Integration by Parts

Integrating by parts Find $\int x \sin x \, dx$.

Summary

- More u-sub
- Definite integrals with u-sub
- Intro to integration by parts