

Worksheet for 5-31-06

1. Graph $f(x) = \sin x$ on $[0, 2\pi]$.

Consider $\int_0^\pi \sin x \, dx$

- (a) Estimate the value.
- (b) Find it with your calculator

$$\int_0^\pi \sin x \, dx =$$

- (c) What do you guess for the following. Check with your calculator.

Can you write a property from the example?

Example

$$\int_{\frac{\pi}{2}}^{\frac{\pi}{2}} \sin x \, dx =$$

Property

$$\int_\pi^{2\pi} \sin x \, dx =$$

$$\int_0^{2\pi} \sin x \, dx =$$

Example

$$\int_{\pi}^0 \sin x \, dx =$$

Property

$$\int_0^{\pi} 2 \sin x \, dx =$$

$$\int_0^{\pi} 2 \sin x + 2 \, dx =$$

2. Let $f(t) = -2t + 4$

(a) Graph f on $[-4, 6]$.

(b) Use geometry to evaluate the following integrals. Check your answer with your calculator.

$$\int_{-2}^{-2} (-2t + 4) \, dt =$$

$$\int_{-2}^0 (-2t + 4) dt =$$

$$\int_{-2}^2 (-2t + 4) dt =$$

$$\int_{-2}^4 (-2t + 4) dt =$$

$$\int_{-2}^6 (-2t + 4) dt =$$

(c) Let $A(x) = \int_{-2}^x (-2t + 4) dt$. Can we find a function rule for $A(x)$?