

6/9/09

- 1.1
- Unit circle Quiz (Ch. P homework is due)
- Break
- 1.2

Prep for tomorrow

- Read 1.3, 1.4
- finish 1.1, 1.2 homework

Algebra and trigonometry can be used to solve problems in which objects move at a constant rate of speed. Calculus was invented in the 17th century as a tool for investigating problems that involve motion where objects move at varied speeds or follow irregular paths. Decide whether the following problems need calculus to solve them. If only precalculus skills are required, solve the problem.

1. Find the area of the triangle which has sides that measure 10m, 14m and 18m. Approximate your result to the nearest tenth.

Recall Heron's formula ...

$$A = \sqrt{s(s-a)(s-b)(s-c)}$$

$$s = \frac{1}{2}(a+b+c)$$

$$s = \frac{1}{2}(10+14+18) = 21$$

$$A = \sqrt{21(21-10)(21-14)(21-18)}$$

$$A = \sqrt{4851}$$

$$A \approx 69.65 \text{ m}^2 = 69.7 \text{ m}^2$$

$$s = \frac{a+b+c}{2}$$

2. The edges of a cube are expanding at a rate of 3 cm per second. Find the rate of change of the volume when the sides measure exactly 5 cm.

We need calculus!

Frank 3. Find the equation of the line secant ^{to cut} to the graph of $f(x) = -x^2 + 2$ at $x=1$ and $x=2$.

$$f(x) = -x^2 + 2$$

$$f(1) = -(1)^2 + 2$$

$$y = -1 + 2$$

$$y = 1 \quad (1, 1)$$

$$f(2) = -(2)^2 + 2$$

$$y = -4 + 2$$

$$y = -2 \quad (2, -2)$$

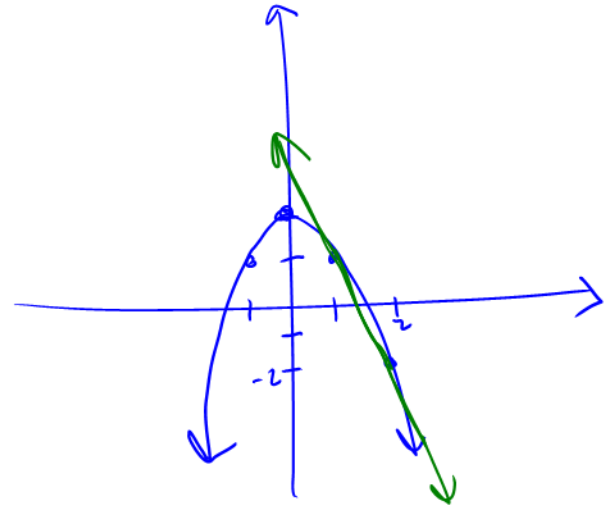
$$m = \frac{\Delta y}{\Delta x} = \frac{-2 - 1}{2 - 1} = \frac{-3}{1}$$

$$y - y_1 = m(x - x_1)$$

$$y - 1 = -3(x - 1)$$

$$y - 1 = -3x + 3$$

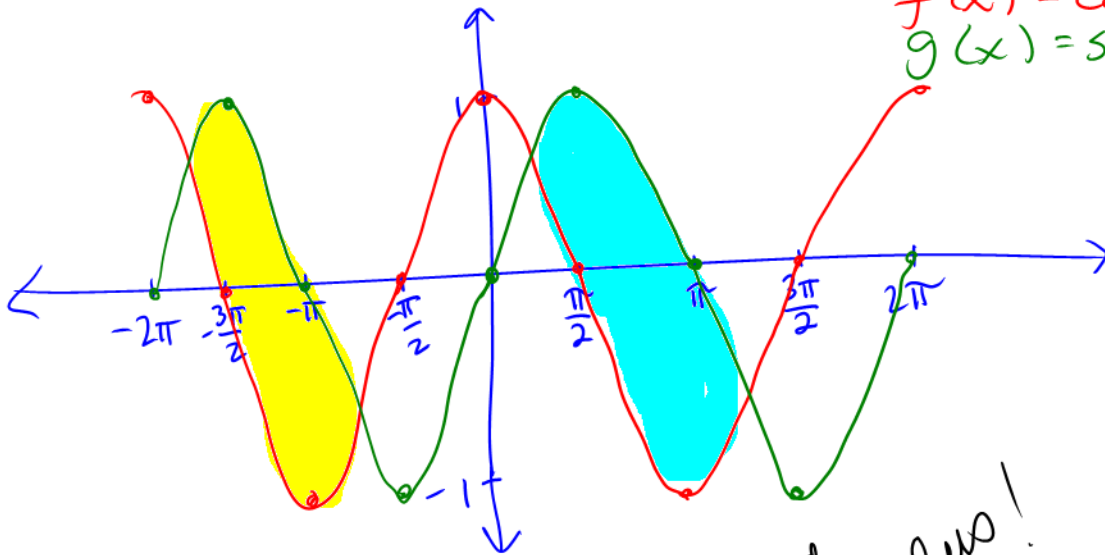
$$\boxed{y = -3x + 4}$$



4. Find the area between the graphs of $f(x) = \cos x$ and $g(x) = \sin x$.

$$f(x) = \cos x$$

$$g(x) = \sin x$$



Need Calculus!