

26 JAN 10

- Midterms
- AP Practice
- Homework Assignment

Hint 1: $h(x) = f(x) g(x)$

let's say $h(x) = x \sin x$

$$h'(x) = x \cos x + \sin x \cdot 1$$

generally $h'(x) = f(x) g'(x) + g(x) f'(x)$

another... $h(x) = f(g(x))$

$$h(x) = (3x+1)^4$$

$$h'(x) = 4(3x+1)^3 \cdot 3$$

generally $h'(x) = f'(g(x)) \cdot g'(x)$

Hint 2
If

f is continuous, find b

$$f(x) = \begin{cases} x^2 + bx, & x \leq 5 \\ 5 \sin\left(\frac{\pi}{2}x\right), & x > 5 \end{cases}$$

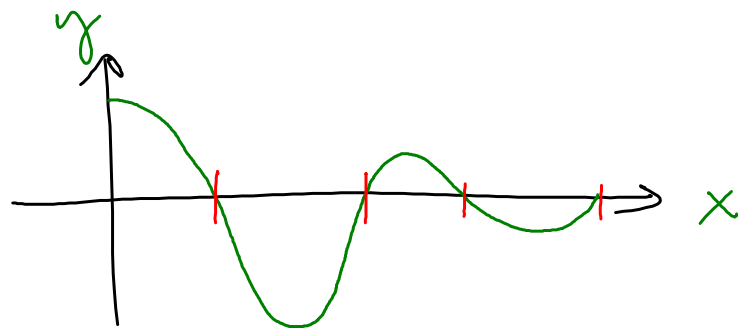
$$x^2 + bx = 5 \sin\left(\frac{\pi}{2}x\right) \text{ @ } x = 5$$

$$25 + 5b = 5 \sin\left(\frac{\pi}{2} \cdot 5\right)$$

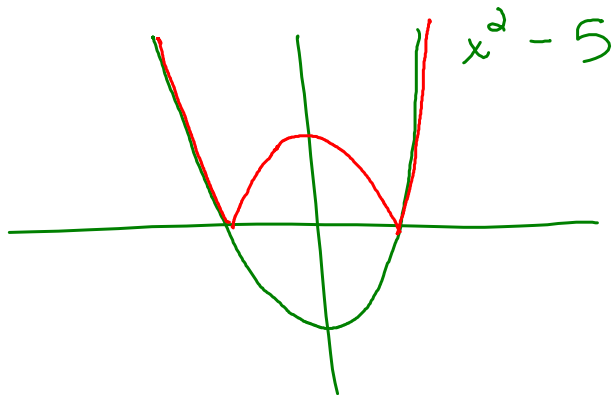
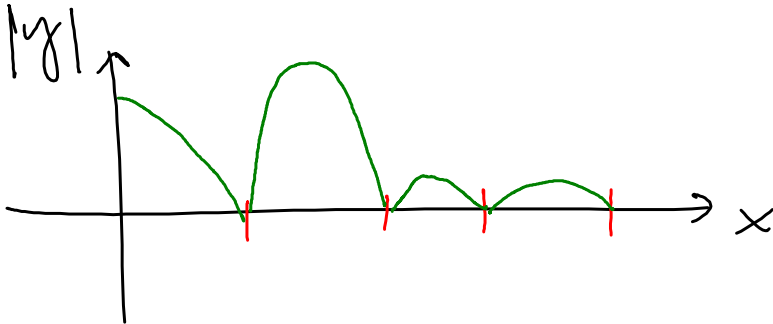
$$25 + 5b = 5$$

$$5 + b = 1 \Rightarrow b = -4$$

Hint 3



this is a velocity graph



draw $|x^2 - 5|$



Hint 1

$$h(x) = x \cos x$$

$$h'(x) = -x \sin x + \cos x \cdot 1$$

generally: $h(x) = f(x)g(x)$

$$h'(x) = f(x)g'(x) + g(x)f'(x)$$

$$h(x) = \sin(x^2 + 1)$$

$$h'(x) = \cos(x^2 + 1) \cdot 2x$$

generally: $h(x) = f(g(x))$

$$h'(x) = f'(g(x)) \cdot g'(x)$$

Hint 2

f is a continuous function \Rightarrow find b

$$f(x) = \begin{cases} x^2 + bx & , x \leq 5 \\ 5 \sin\left(\frac{\pi}{2}x\right) & , x > 5 \end{cases}$$

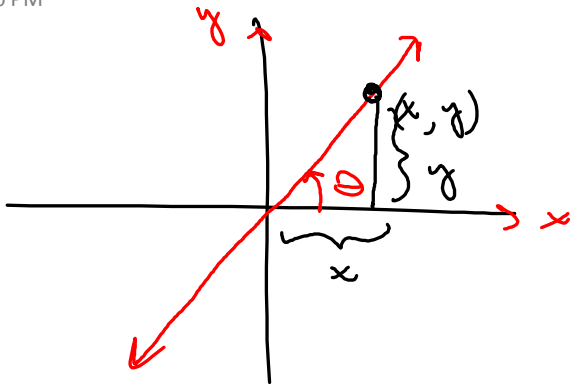
$$x^2 + bx = 5 \sin\left(\frac{\pi}{2}x\right) @ x = 5$$

$$5^2 + 5b = 5 \sin\left(\frac{5\pi}{2}\right)$$

$$25 + 5b = 5$$

$$5 + b = 1 \Rightarrow b = -4$$

Tuesday, January 26, 2010
1:50 PM



$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{y - 0}{x - 0} = \frac{y}{x}$$

$$\tan \theta = \frac{y}{x}$$

$$m = \tan \theta$$

$$\frac{dm}{dt} = \sec^2 \theta \frac{d\theta}{dt}$$

$$= \frac{1}{\cos^2 \theta} \frac{d\theta}{dt}$$

$$4.) f'(x) = \underbrace{\cos x}_{} \cdot \underbrace{e^{\sin x}}_{}$$

$$7.) f'(x) = \frac{4 \cos x}{2(4 \sin x + 2)^{1/2}} = \frac{\cancel{4}^2}{\cancel{2} \cdot 2^{1/2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{2\sqrt{2}}{2} = \sqrt{2}$$

$$7.) \quad x^2 + y^2 = 169$$

$$\cancel{2x} + \cancel{2y} \frac{dy}{dx} = 0$$

$$\frac{dy}{dx} = -\frac{x}{y} \Rightarrow \left. \frac{dy}{dx} \right|_{(5, -12)} = \frac{5}{12}$$

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

$$y + 12 = \frac{5}{12}(x - 5)$$

$$12y + 144 = 5x - 25$$

$$\left. \begin{array}{l} 12y - 5x = -169 \\ 5x - 12y = 169 \end{array} \right\}$$

Tuesday, January 26, 2010
1:51 PM

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

1) C
2) C
3) D
4) D
5) A
6) B
7) E
8) C
9) C

10) D
11) D
12) D
13) E
14) E
15) E
16) E
17) C
18) C

HOMEWORK

work on scans

READ ⁵⁻¹ → 5-7

^{HW}

finish non-calc MC exam I