24 Sept 2009

112)

Der of odd function is even

$$f(-x) = -f(x)$$

$$\frac{d}{dx} f(-x) = f'(-x)(-1)$$

$$\frac{d}{dx} -f(x) = -\frac{d}{dx} f(x)$$

117) $f(x) = |\sin x| = \frac{\cos x\ (\sin x)}{|\sin x|}$

in #113 $\frac{d}{dx}|u| = u' \cdot \frac{u}{|u|}$ $u \neq 0$

$$|u| = \begin{cases} -u & \text{if } u < 0 \\ u & \text{if } u > 0 \end{cases}$$

$$\frac{d}{dx}|u| = \begin{cases} -\frac{d}{dx}u & \text{if } u < 0 \\ \frac{d}{dx}u & \text{if } u > 0 \end{cases}$$

$\frac{2\pi}{B} = 10$

$\frac{\pi}{5} = B$

121) $y = A\cos wt = \frac{7}{4}\cos\frac{\pi}{5}t$

$$\lim_{t \to a} \frac{D(t) - D(a)}{t - a} = D'(a)$$

(#5) $S = C(R^2 - r^2)$

$$\frac{dS}{dt} = C\left(2R\frac{dR}{dt} - 0\right)$$

$(x^2+4)\,y = 8$

$(2,1)$

$$2xy + \frac{dy}{dx}(x^2+4) = 0$$

$$\frac{dy}{dx} = \frac{-2xy}{x^2+4}$$

$$\left.\frac{dy}{dx}\right|_{(2,1)} = \frac{-2(2)(1)}{2^2+4} = \frac{-4}{8} = -\frac{1}{2}$$
