32 a. g(x) = f(x) sin x 40. tim fin x Karran
$g'(x) = f(x) \cdot \frac{\partial}{\partial x} \sin x + \sin x f'(x) \qquad \lim_{x \to 0} \sin x = \pi x \qquad \text{Note: } \lim_{x \to 0} \frac{\pi}{\sin x} = 1 \text{, as it}$ $\frac{\partial}{\partial x} \sin x + \sin x \cdot f'(x) \qquad \text{is simply the inverse of } \frac{\sin x}{x \to 0} = \frac{\sin x}{x}$
= f(x)·cosx + sinx·f'(x) is simply the inverse of 1270 m
 3 MA . 1
$g(\frac{\pi}{3}) = 4\cos\frac{\pi}{3} - 2\sin\frac{\pi}{3}$
$= \lim_{x \to 0} \frac{\sin x}{x} \cdot \lim_{x \to 0} \frac{1}{x \to 0}$
$b. h(x) = \frac{\cos x}{f(x)}$ $\frac{1 \text{ im } \frac{1}{x}}{x - 70 \text{ if}}$
$h'(\alpha) = \frac{f(\alpha)}{\delta x} \cos \alpha - \cos \alpha \cdot f'(\alpha) \qquad \left(= \frac{1}{\pi} \right)$
 $\int_{\Gamma(x)}^{\Gamma(x)} \int_{\Gamma(x)}^{2}$
$=\frac{-f(\pi)\sin\pi-\cos\frac{f(\pi)}{2}}{[\cos\pi]^2}$ lim $\cos\theta$
$=\frac{-f(x)\sin x - \cos x \cdot f'(x)}{\left[f(x)\right]^2}$ $=\frac{-f(x)\sin x - \cos x \cdot f'(x)}{\left[f(x)\right]^2}$ $=\frac{-f(x)\sin x - \cos x \cdot f'(x)}{\sin \theta}$
 $\frac{-4\sin\frac{\pi}{3} + 2\cos\frac{\pi}{3}}{h(\frac{\pi}{3})^2} = \frac{\lim_{n \to \infty} \cos\theta - 1}{\theta \to 0} = \frac{\theta}{\sin\theta}$
 $\begin{bmatrix} -2\sqrt{3} - 1 \\ -16 \end{bmatrix}$ $= \frac{16}{16}$
16 / 0 AO B SIND
$= \lim_{\theta \to 0} \frac{\cos \theta - 1}{\theta} \cdot \lim_{\theta \to 0} \frac{\theta}{\sin \theta}$
9-10 B 0-10 B
24 N = (05X)
 $34. y = \frac{\cos x}{2 + \sin x}$
$\frac{(2+\sin x)\frac{\partial}{\partial x}\cos x - \cos x}{(2+\sin x)^2}$
$y' = \frac{\sqrt{2+\sin x}}{2}$ $\sin 3x \sin 5x$
 $\frac{(2\tau \sin x)^2}{44 \cdot x \to 0} \frac{\sin 3x \sin 5x}{x^2}$
(a+c)ax $(-s)ax$ $(-c)cx$ $(c)cx$
$= \frac{-\sin^2 \alpha - 2\sin \alpha - \cos^2 \alpha}{(2+\sin \alpha)^2} = \lim_{x \to 0} \frac{\sin 3\alpha}{3\alpha} \cdot \frac{\sin 5\alpha}{5\alpha}$
 $(2+\sin x)^2 \qquad \qquad = x \to 0 3x \qquad 5x$
If tangent line is havizontal, $y^1=0$ = $\lim_{x\to 0} \frac{\sin 3x}{3x}$. $\lim_{x\to 0} \frac{\sin 5x}{x\to 0}$. $\lim_{x\to 0} \frac{1}{x\to 0}$
270 3x x70 5x x70
$0 = -\sin^2 \alpha - 2\sin \alpha - \cos^2 \alpha$
5- 3n x - 25/nx - (6)-x
0 = -1 - 2 sin x
$\sin x = -\frac{1}{2}$
 $x = \frac{4\pi}{6} + 2\pi K \qquad \frac{11\pi}{6} + 2\pi K$
6

The supplemental services of the services of t	
T 3-2 - 2000-00-00-00-00-00-00-00-00-00-00-00-00	$\lim_{x\to\infty} cscx \cdot sin(sinx) \qquad \qquad 52. Let f(x) = x sinx$ $\lim_{x\to\infty} sin(sinx) \qquad \qquad bubuluwaaaa$
	1: f'(x): xcosx + sinx
	1: f"(x): x - sinx + cosx + cosx = - xsinx + 2005x
	3: f"(x): -xcosx ************************************
-	$\frac{\lim_{n \to \infty} \frac{\sin(n^2)}{x}}{\sqrt{2}} \qquad \qquad \frac{4 \cdot f^{(4)}(x) = -x \cdot (-\sin x) + (\cos x(-1) + 44) - 3 \cdot \cos x}{\sqrt{2}} \qquad \qquad \frac{1}{\sqrt{2}} \frac{\sin(x^2)}{x} = \frac{x \cdot (-\sin x) + (\cos x + 5) \cdot \cos x}{\sqrt{2}} \qquad \qquad \frac{1}{\sqrt{2}} \frac{\sin(x^2)}{x} = \frac{x \cdot (-\sin x) + (\cos x + 5) \cdot \cos x}{\sqrt{2}} \qquad \qquad \frac{1}{\sqrt{2}} \frac{\sin(x^2)}{x} = \frac{x \cdot (-\sin x) + (\cos x + 5) \cdot \cos x}{\sqrt{2}} \qquad \qquad \frac{1}{\sqrt{2}} \frac{\sin(x^2)}{x} = \frac{x \cdot (-\sin x) + (\cos x + 5) \cdot \cos x}{\sqrt{2}} \qquad \qquad \frac{1}{\sqrt{2}} \frac{\sin(x^2)}{x} = \frac{x \cdot (-\sin x) + (\cos x + 5) \cdot \cos x}{\sqrt{2}} \qquad \qquad \frac{1}{\sqrt{2}} \frac{\sin(x^2)}{x} = \frac{x \cdot (-\sin x) + (\cos x + 5) \cdot \cos x}{\sqrt{2}} \qquad \qquad \frac{1}{\sqrt{2}} \frac{\sin(x^2)}{x} = \frac{x \cdot (-\sin x) + (\cos x + 5) \cdot \cos x}{\sqrt{2}} \qquad \qquad \frac{1}{\sqrt{2}} \frac{\sin(x^2)}{x} = \frac{x \cdot (-\sin x) + (\cos x) + (\cos x)}{\sqrt{2}} \qquad \qquad \frac{1}{\sqrt{2}} \frac{\sin(x^2)}{x} = \frac{x \cdot (-\sin x) + (\cos x) + (\cos x)}{\sqrt{2}} \qquad \qquad \frac{1}{\sqrt{2}} \frac{\sin(x^2)}{x} = \frac{x \cdot (-\sin x) + (\cos x) + (\cos x)}{\sqrt{2}} \qquad \qquad \frac{1}{\sqrt{2}} \frac{\sin(x^2)}{x} = \frac{x \cdot (-\sin x) + (\cos x) + (\cos x)}{\sqrt{2}} \qquad \qquad \frac{1}{\sqrt{2}} \frac{\sin(x^2)}{x} = \frac{x \cdot (-\sin x) + (\cos x)}{\sqrt{2}} \qquad \qquad \frac{1}{\sqrt{2}} \frac{\sin(x^2)}{x} = \frac{x \cdot (-\sin x) + (\cos x)}{\sqrt{2}} \qquad \qquad \frac{1}{\sqrt{2}} \frac{\sin(x^2)}{x} = \frac{x \cdot (-\sin x) + (\cos x)}{\sqrt{2}} \qquad \qquad \frac{1}{\sqrt{2}} \frac{\sin(x^2)}{x} = \frac{x \cdot (-\sin x) + (\cos x)}{\sqrt{2}} \qquad \qquad \frac{1}{\sqrt{2}} \frac{\sin(x^2)}{x} = \frac{x \cdot (-\sin x) + (\cos x)}{\sqrt{2}} \qquad \qquad \frac{1}{\sqrt{2}} \frac{\sin(x^2)}{x} = \frac{x \cdot (-\sin x) + (\cos x)}{\sqrt{2}} \qquad \qquad \frac{1}{\sqrt{2}} \frac{\sin(x^2)}{x} = \frac{x \cdot (-\sin x) + (\cos x)}{\sqrt{2}} \qquad \qquad \frac{1}{\sqrt{2}} \frac{\sin(x^2)}{x} = \frac{x \cdot (-\sin x)}{\sqrt{2}} = \frac{x \cdot (-\cos x)}{\sqrt{2}}$
	$\lim_{x\to 0} \frac{\sin(x^2)}{x} \cdot \frac{x}{x}$ $5: f^{(5)}(x) : x\cos x + \sin x + 4\sin x = x\cos x + 5\sin x + 6\cos x$ $6: f^{(6)}(x) : x\cos x + \sin x + \cos x + 5\cos x = -x\sin x + 6\cos x$
	$\lim_{x \to 0} \frac{\sin(x^2)}{x^2} \cdot x$ A new cycle starts after 4.
	$=\lim_{x\to 0}\frac{\sin(x^2)}{x^2}\cdot\lim_{x\to 0}x=[0]$ 35% 4=3 (editous form of 3)
	- x105x - 35 sinx
and the last offi	w.
	$ \lim_{50, x\to 1} \frac{\sin(x-1)}{x^2+x-2} $
	$\lim_{x \to 1} \frac{\sin(x-1)}{(x-1)(x+2)}$
	$\lim_{x \to 1} \frac{\sin(x)}{x-1} \frac{1}{x+2}$
	function of the vight by 1
	$\lim_{x \to 1} \frac{\sin(x-1)}{x-1} = ($
	: 1 - 1/3
