Senior Analysis Name _____

Trig Limits Lecture 32

Evaluate the following limits

1. $\lim_{x\to 0} \frac{\sin 4x}{x}$

2. $\lim_{x\to 0} \frac{\sin^3 4x}{4x^3}$

3. $\lim_{x\to 0} \frac{x^2 + \sin^2 2x}{x^2}$

4. $\lim_{x\to 3} \frac{\sin(x-3)}{x^3 - 27}$

5. $\lim_{x\to 0} \left(\frac{\sin^3 (3x)}{2x^3 - 5x^4} \right)$

6. $\lim_{x\to 0} \frac{5x^2 - \sin^2 (2x)}{3x^2}$

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Trig Derivatives Lecture 33

Find $\frac{dy}{dx}$ for the following

1. $y = -10x + 3\cos x$
2. $y = \frac{3}{x} + \sin 5x$
3. $y = \sin^3 3x$
4. $y = \cos^2 6x$
5. $y = (\cos x)(\sin x)$
6. $y = \frac{1 + \cos x}{\sin x}$
7. $y = (\sin x + \cos x)\sec x$
8. $y = 3\cos^4\left(5x^2\right)$
9. $y = x^2 \tan\left(x^2\right)$
10. $y = \sin^2 x + \cos^2 x$
11. $y = (\sec x + \tan x)(\sec x - \tan x)$
12. $y = x^2 \cot x - \frac{1}{x^2}$

Find y' and y" for the following.

13. $y = \sin x$
14. $y = \sec x$

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Implicit Differentiation Lecture 34

Find $\frac{dy}{dx}$ for the following

1. $x^2 + y^2 = 9$

2. $x^3 + y^3 = 9$

3. $xy = 10$

4. $x^2y + xy^2 = 24$

5. $\frac{x}{y} = 3$

6. $x^2y^3 - 2xy + y^4 = 0$

7. $2xy=x^2$