CALCULUS I – Worksheet #10

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1. $\lim_{x \to 2} \frac{x^2-4}{x^2+4}$ is $A)\,1$ $B)\,0$ $C)\,-\frac{1}{2}$ $D)\,-1$ $E)\,\infty$

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2. $\lim_{x \to \infty} \frac{4-x^2}{x^2-1}$ *is* $A)1$ $B)0$ $C)-4$ $D)-1$ $E)\infty$

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3. $\lim_{x \to 3} \frac{x-3}{x^2-2x-3}$ is $A)0$ $B)1$ $C)\frac{1}{4}$ $D)\infty$ $E)$*none of these*

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4. $\lim_{x \to 0} \frac{x}{x}$ *is* $A)1$ $B)0$ $C)\infty$ $D)-1$ $E)$ nonexistent

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5. $\lim_{x \to 2} \frac{x^3-8}{x^2-4}$ is $A)4$ $B)0$ $C)1$ $D)3$ $E)\infty$

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6. $\lim_{x \to \infty} \frac{4-x^2}{4x^2-x-2}$ is $A)-2$ $B)-\frac{1}{4}$ $C)1$ $D)2$ $E)$nonexistent

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7. $\lim_{x \to \infty} \frac{5x^3+27}{20x^2+10x+9}$ is $A)\infty$ $B)\frac{1}{4}$ $C)3$ $D)0$ $E)1$

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8. $\lim_{x \to \infty} \frac{3x^2+27}{x^3-27}$ is $A)3$ $B)\infty$ $C)1$ $D)-1$ $E)0$

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9. $\lim_{x \to 0} \frac{\tan x}{x}$ is $A)0$ $B)1$ $C)\pi$ $D)\infty$ E) does not exist

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10. $\lim_{x \to 5^-} \frac{x+1}{x-5}$ is $A)1$ $B)-1$ $C)0$ $D)\infty$ $E)-\infty$

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11. $\lim_{x \to 0} \frac{\sin 3x}{\sin 4x}$ is $A)1$ $B)\frac{4}{3}$ $C)\frac{3}{4}$ $D)0$ $E)$nonexistent

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12. $\lim_{x \to \infty} \frac{\sin 4x}{7x^2}$ is $A)$ nonexistent $B)1$ $C)2$ $D)\infty$ $E)0$

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13. $\lim_{x \to 0} \frac{\sin x}{x^2 + 3x}$ is A) 1 B) $\frac{1}{3}$ C) 3 D) ∞ E) $\frac{1}{4}$

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14. $\lim_{h \to 0} \frac{(2 + 2h) - 2}{h}$

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15. $\lim_{h \to 0} \frac{\sin(\frac{\pi}{2} + h) - 1}{h}$

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16. $\lim_{x \to 0} \frac{1 - \cos 3x}{\sin 3x}$

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17. $y = x^{\sin x}$ Find $\frac{dy}{dx}$

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18. $xy^2 + 2 = y$ Find $\frac{dy}{dx}$ $\frac{dy}{dx} = \frac{y^2}{1 - 2xy}$

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19. Find the slope of the tangent line to the curve $y = 3e^{2x}$ at $(1, 3e^2)$

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20. Write the equation of the line tangent to $y = 3x^2 + 4$ at (2,16).
