

CALCULUS H
CH.2 #3

NAME _____

USE THE LIMIT THEOREMS TO FIND THE LIMIT, IF IT EXISTS.

1. $\lim_{x \rightarrow \sqrt{2}} 15$

2. $\lim_{x \rightarrow -2} x$

3. $\lim_{x \rightarrow 4} (3x - 4)$

4. $\lim_{x \rightarrow -2} \frac{x-5}{4x+3}$

5. $\lim_{x \rightarrow 1} (-2x+5)^4$

6. $\lim_{x \rightarrow 0} \frac{4 - \sqrt{16+x}}{x}$

7. $\lim_{x \rightarrow 1} \frac{x^2-1}{x-1}$

8. $\lim_{x \rightarrow 0} \frac{\sqrt{x^2+9}-3}{x^2}$

9. $\lim_{x \rightarrow 2} \frac{x^2+x-6}{x-2}$

10. $\lim_{x \rightarrow 0} \frac{(4+x)^2-16}{x}$

11. $\lim_{x \rightarrow 1} \frac{x^3-1}{x^2-1}$

12. $\lim_{x \rightarrow 4} \frac{x^2-4x}{x^2-3x-4}$

13. $\lim_{x \rightarrow 0} \frac{(2+x)^2-4}{x}$

14. $\lim_{x \rightarrow 2} \frac{x^4-16}{x-2}$

15. $\lim_{x \rightarrow 1} \frac{x^2-1}{x-1}$

16.
$$\lim_{x \rightarrow -2} \frac{x^3 + 2x^2 - 1}{5 - 3x}$$

17.
$$\lim_{x \rightarrow 1} g(x) \quad g(x) = \begin{cases} x+1 & \text{if } x \neq 1 \\ \pi & \text{if } x = 1 \end{cases}$$

18.
$$\lim_{h \rightarrow 0} \frac{(3+h)^2 - 9}{h}$$

19.
$$\lim_{t \rightarrow 0} \frac{\sqrt{t^2 + 9} - 3}{t^2}$$

20.
$$\lim_{x \rightarrow 0} |x|$$

21.
$$\lim_{x \rightarrow 7} \frac{\sqrt{x+2} - 3}{x-7}$$

22.
$$\lim_{x \rightarrow -4} \frac{\frac{1}{4} + \frac{1}{x}}{4+x}$$

23.
$$\lim_{x \rightarrow 0} \frac{(4+x)^2 - 16}{x}$$

24.
$$\lim_{t \rightarrow 2} \frac{t^2 - 3t + 2}{t^2 - 4}$$

25.
$$\lim_{x \rightarrow 0} \frac{\frac{1}{2+x} - \frac{1}{2}}{x}$$

26.
$$\lim_{x \rightarrow 0} \frac{x + \sin x}{x}$$

27. Given $\lim_{x \rightarrow a} f(x) = -3$; $\lim_{x \rightarrow a} g(x) = 0$; $\lim_{x \rightarrow a} h(x) = 8$, find

a.
$$\lim_{x \rightarrow a} [f(x) + h(x)]$$

b.
$$\lim_{x \rightarrow a} [f(x)]^2$$

c.
$$\lim_{x \rightarrow a} \sqrt[3]{h(x)}$$

d.
$$\lim_{x \rightarrow a} \frac{f(x)}{g(x)}$$