

Student: <u>Key</u>	Instructor: Joe Better	Assignment: 14.1 HW 2020 (Adjusted)
Date: _____	Course: Pre-Calculus Pre AP (Master Course)	

1. Use a table to find the indicated limit.

$$\lim_{x \rightarrow -3} \left(\frac{x^2 + 3x}{x + 3} \right)$$

$$\frac{x(x+3)}{(x+3)}$$

Select the correct choice below and fill in any answer boxes in your choice.

A. $\lim_{x \rightarrow -3} \left(\frac{x^2 + 3x}{x + 3} \right) =$ -3 (Type an exact answer.)

$$\lim_{x \rightarrow -3} x$$

$$(-3)$$

B. The limit does not exist.

ID: 14.1.11

2. Use a table to find the indicated limit.

$$\lim_{x \rightarrow 0} \frac{\cos(8x) - 1}{9x}$$

$$x \rightarrow 0^- = \frac{1-1}{9(0.0001)} = 0$$

Select the correct choice below and fill in any answer boxes in your choice.

A. $\lim_{x \rightarrow 0} \frac{\cos(8x) - 1}{9x} =$ 0

$$x \rightarrow 0^+ = \frac{1-1}{9(0.0001)} = 0$$

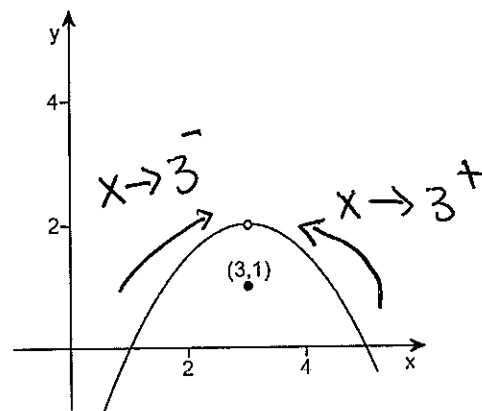
B. The limit does not exist.

* They approach same number *

ID: 14.1.15

3. Use the graph shown to determine if the limit exists. If it does, find its value.

$$\lim_{x \rightarrow 3} f(x)$$



Select the correct choice below and fill in any answer boxes in your choice.

A. $\lim_{x \rightarrow 3} f(x) =$ 2

B. The limit does not exist.

* they both approach

2, even though at 3 the value is 1

ID: 14.1.19

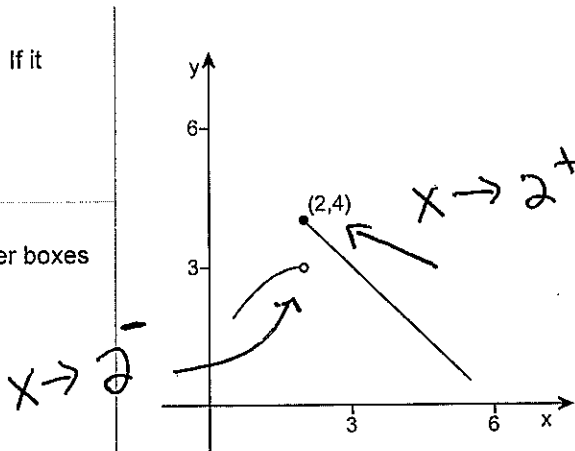
4. Use the graph shown to determine if the limit exists. If it does, find its value.

$$\lim_{x \rightarrow 2} f(x)$$

Select the correct choice below and fill in any answer boxes in your choice.

A. $\lim_{x \rightarrow 2} f(x) =$ _____

B. The limit does not exist.



ID: 14.1.21

* they approach ~~two~~ two different numbers

5. Graph the function. Use the graph to find the indicated limit, if it exists.

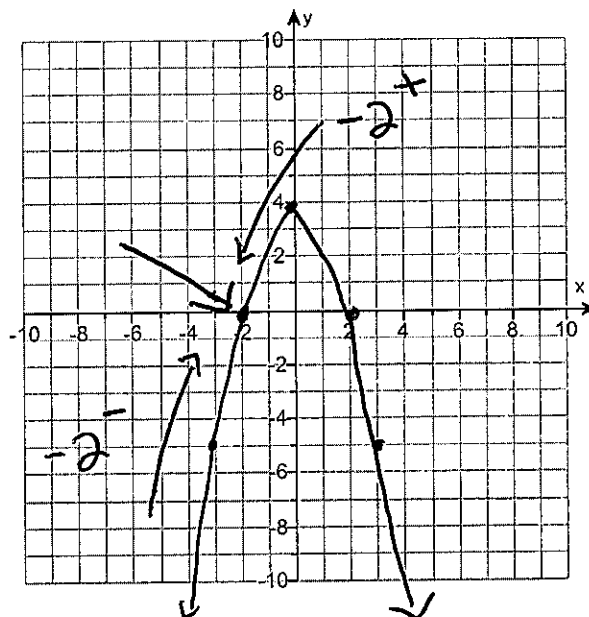
$$\lim_{x \rightarrow -2} f(x), 4 - x^2$$

Use the graphing tool to graph the function.

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

A. $\lim_{x \rightarrow -2} f(x) =$

B. The limit does not exist.



ID: 14.1.25

* both approach zero

6. Graph the function $f(x) = e^{2x}$. Use the graph to find the indicated limit, if it exists.

$$\lim_{x \rightarrow 0} f(x), f(x) = e^{2x}$$

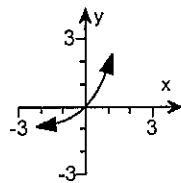
Choose the correct graph $f(x) = e^{2x}$ on the right.

Select the correct choice below and fill in any answer boxes in your choice.

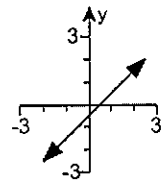
A. $\lim_{x \rightarrow 0} f(x) =$ 1

B. The limit does not exist.

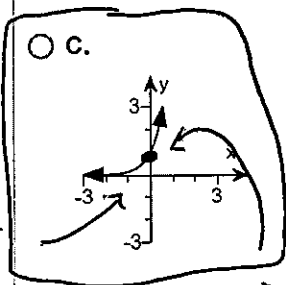
A.



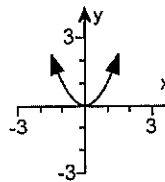
B.



C.



D.



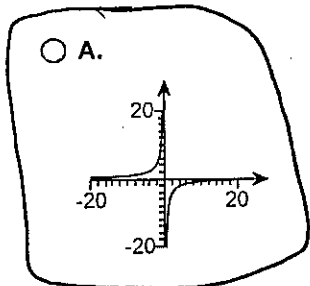
ID: 14.1.31 * both approach 1 *

7. Graph the function. Use the graph to find the indicated limit, if it exists.

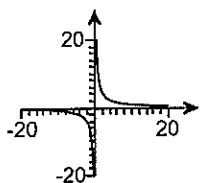
$$\lim_{x \rightarrow 5} f(x), f(x) = -\frac{9}{x}$$

Select the graph of the function $f(x) = -\frac{9}{x}$.

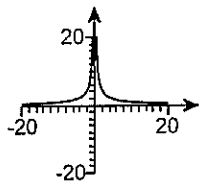
A.



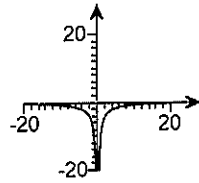
B.



C.



D.



Select the correct choice below and fill in any answer boxes in your choice.

A. $\lim_{x \rightarrow 5} -\frac{9}{x} =$ $-\frac{9}{5}$ (Type an exact answer.)

B. The limit does not exist.

* substitute in 5 for x
since denominator will
not equal zero

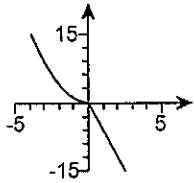
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8. Graph the function. Use the graph to find the indicated limit, if it exists.

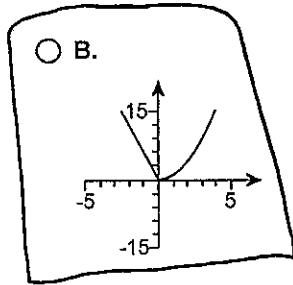
$$\lim_{x \rightarrow 0} f(x), f(x) = \begin{cases} x^2 & x \geq 0 \\ -6x & x < 0 \end{cases}$$

Select the graph of the function f.

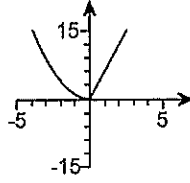
A.



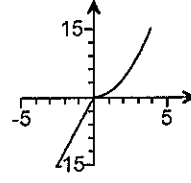
B.



C.



D.



Select the correct choice below and fill in any answer boxes in your choice.

A. $\lim_{x \rightarrow 0} f(x) =$ (Type an exact answer.)

B. The limit does not exist.

** both values approach zero from the positive and negative side*

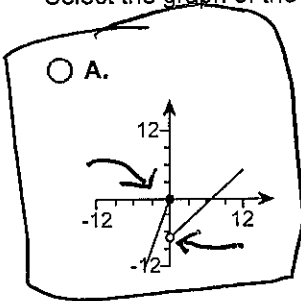
ID: 14.1.35

9. Graph the function. Use the graph to find the indicated limit, if it exists.

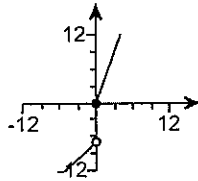
$$\lim_{x \rightarrow 0} f(x), f(x) = \begin{cases} 3x & x \leq 0 \\ x - 7 & x > 0 \end{cases}$$

Select the graph of the function f.

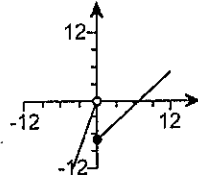
A.



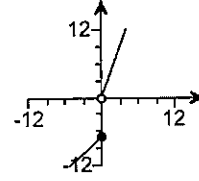
B.



C.



D.



Select the correct choice below and fill in any answer boxes in your choice.

A. $\lim_{x \rightarrow 0} f(x) =$ _____ (Type an exact answer.)

B. The limit does not exist.

** Approaches two different numbers so it does not exist*

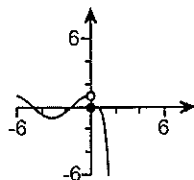
ID: 14.1.37

10. Graph the function. Use the graph to find the indicated limit, if it exists.

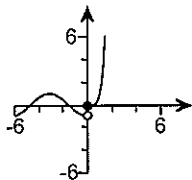
$$\lim_{x \rightarrow 0} f(x), f(x) = \begin{cases} \cos x & x \leq 0 \\ x^5 & x > 0 \end{cases}$$

Select the graph of the function f.

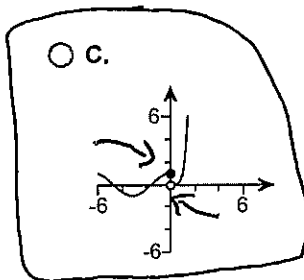
A.



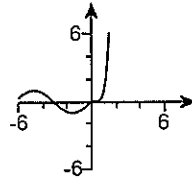
B.



C.



D.



Find $\lim_{x \rightarrow 0} f(x)$, if it exists. Choose the correct answer below.

A. $\lim_{x \rightarrow 0} f(x)$ does not exist

B. $\lim_{x \rightarrow 0} f(x) = 0$

C. $\lim_{x \rightarrow 0} f(x) = -5$

D. $\lim_{x \rightarrow 0} f(x) = 5$

* approaches two different numbers

ID: 14.1.41

11. Use a graphing utility to find the indicated limit rounded to two decimal places.

$$\lim_{x \rightarrow 3} \left(\frac{x^3 - 3x^2 + x - 3}{x^4 - 3x^3 - 5x + 15} \right)$$

* factor since denominator equals zero

Select the correct choice below and fill in any answer boxes in your choice.

A. $\lim_{x \rightarrow 3} \left(\frac{x^3 - 3x^2 + x - 3}{x^4 - 3x^3 - 5x + 15} \right) = \boxed{.45}$ (Round to two decimal places.)

B. The limit does not exist.

$$\frac{x^2(x-3) + (x-3)}{x^3(x-3) - 5(x-3)}$$

$$\frac{(x^2+1)(x-3)}{(x^3-5)(x-3)}$$

ID: 14.1.43

Substitute in 3 for x

$$\frac{3^2+1}{3^3-5} = \frac{10}{22} = .45$$

12. Use a graphing utility to find the indicated limit rounded to two decimal places.

$$\lim_{x \rightarrow -6} \frac{x^3 + 12x^2 + 36x}{x^4 + 6x^3 + 2x + 12}$$

Select the correct choice below and fill in any answer boxes in your choice.

A. $\lim_{x \rightarrow -6} \frac{x^3 + 12x^2 + 36x}{x^4 + 6x^3 + 2x + 12} = \boxed{0}$

- B. The limit does not exist.

ID: 14.1.47

* Since denominator equals zero, factor

$$\frac{x(x^2 + 12x + 36)}{x^3(x+6) + 2(x+6)}$$

$$\frac{x(x+6)(x+6)}{(x^3+2)(x+6)}$$

Substitute in -6 for x

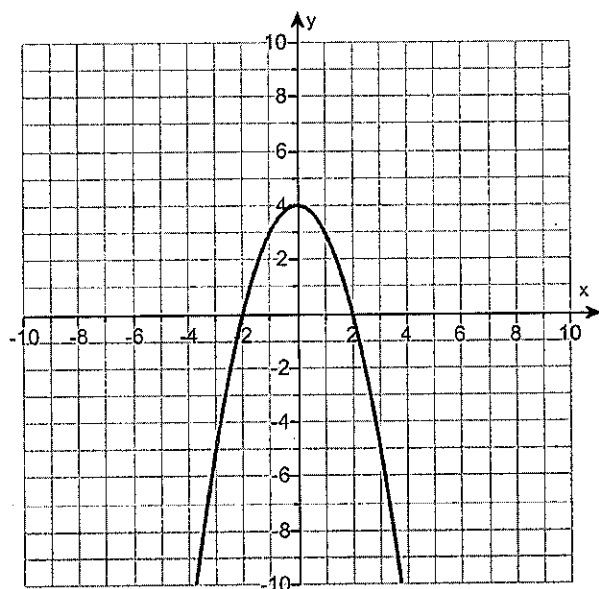
$$\frac{-6(-6+6)}{(-6)^3 + 2} = \frac{0}{-214} = \boxed{0}$$

1. A. $\lim_{x \rightarrow -3} \left(\frac{x^2 + 3x}{x + 3} \right) = \boxed{-3}$ (Type an exact answer.)

2. A. $\lim_{x \rightarrow 0} \frac{\cos(8x) - 1}{9x} = \boxed{0}$

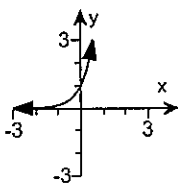
3. A. $\lim_{x \rightarrow 3} f(x) = \boxed{2}$

4. B. The limit does not exist.



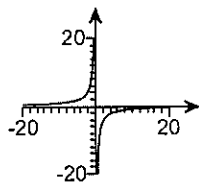
5.

A. $\lim_{x \rightarrow -2} f(x) = \boxed{0}$



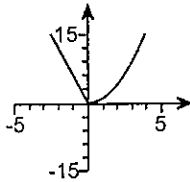
6. C.

A. $\lim_{x \rightarrow 0} f(x) = \boxed{1}$



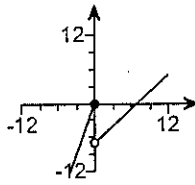
7. A.

$$A. \lim_{x \rightarrow 5} -\frac{9}{x} = \boxed{-\frac{9}{5}} \text{ (Type an exact answer.)}$$



8. B.

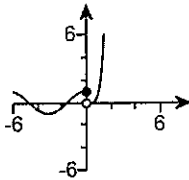
$$A. \lim_{x \rightarrow 0} f(x) = \boxed{0} \text{ (Type an exact answer.)}$$



9. A.

B. The limit does not exist.

10.



C.

A. $\lim_{x \rightarrow 0} f(x)$ does not exist

$$11. A. \lim_{x \rightarrow 3} \left(\frac{x^3 - 3x^2 + x - 3}{x^4 - 3x^3 - 5x + 15} \right) = \boxed{0.45} \text{ (Round to two decimal places.)}$$

$$12. A. \lim_{x \rightarrow -6} \frac{x^3 + 12x^2 + 36x}{-6x^4 + 6x^3 + 2x + 12} = \boxed{0}$$