Past problems #1

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1.
$$|-2x^2 + 3x + 2| \ge -x + 2$$

· factorizamos $|-x| = |-x| = |-x|$
· cuatro casas

$$|(X-2)(2x+1)| \ge -x+2$$

2-
$$\overrightarrow{A} \cdot \overrightarrow{B}$$

3- $\overrightarrow{A} \cdot \overrightarrow{B}$

4- $\overrightarrow{A} \cdot \overrightarrow{B}$

lo mismo con diferente

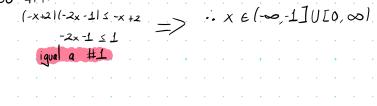
 $2\times +1 \le -1$
 $2\times 1 -2$
 $\times \le -1$

Caso #2:

$$(x-2)(-2x-1) \ge -x+2$$

 $(x-2)(-2x-1) \ge 1$
 $(x-2)(-2x-1) \ge 1$

Caso #3:
$$(x-2)(-2x-1) \ge -x+2$$
 $(-x+2)(-2x-1) \ge 1$ $-2x+1 \ge 1$ iqual a



 $(x-2)(2x+1) \ge -x+2 =>$

caso #1-

- (2x+11≥ 1

podemos ver que
$$g(x) = (h \circ f)(x)$$
 donde $h(x) = 3x - x$, sabemos que $h(x)$ es un polinomio . Dh. $x \in [17]$, así que no nos preocupamos por $h(x)$, necesitamos que lo que esté adentro de $f(x)$ esté entre $[-1,0]$, esto implica

$$-15-x^{2}50 \qquad y \qquad -153-4x^{2}50$$

$$-15-x^{2}50 \qquad -45-4x^{2}503$$

$$05x^{2}51 \qquad 354x^{2}54$$



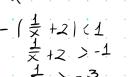
 $\lim_{x \to 0} \left(\frac{x^2}{x^2} - \frac{5x\sin(3x)}{x^2} \right) = \lim_{x \to 0} 1 - \lim_{x \to 0} \frac{5\sin(3x)}{x} = 1 - 5\frac{\lim_{x \to 0} \frac{\sin(3x)}{3}}{x} = \frac{\lim_{x \to 0} \frac{\sin(3x)}{3}}{3} = 1 - 15$



$$4 - \left| \frac{1}{1 \times 1} - 2 \right| < 1$$

$$g(1\times1) = \frac{1}{1\times1} - 2 \rightarrow 1g($$

: xe (-1,-==) U(==,1)



5.
$$D(g \circ f | -) f(x) = \sqrt{(3-x)x} \quad \forall \quad Dg = (\frac{1}{\sqrt{2}}, \infty)$$

6.
$$\lim_{x \to \frac{\pi}{4}} \frac{\sec x - \cos x}{1 - \tan x}$$

$$\lim_{x \to \frac{\pi}{4}} \frac{\sec x - \cos x}{1 - \frac{\sec x}{\cos x}} = \lim_{x \to \frac{\pi}{4}} \frac{\sec x - \cos x}{\cos x} = \lim_{x \to \frac{\pi}{4}} \frac{\sec x - \cos x}{\cos x}$$

$$= \lim_{x \to \frac{\pi}{4}} \frac{\cos x |\sec x - \cos x|}{\cos x} = \lim_{x \to \frac{\pi}{4}} \frac{\cos x |\csc x|}{\cos x} = \lim_{x \to \frac{\pi}{4}} \frac{\cos x |\csc x|}{\cos x}$$

$$= \lim_{x \to \frac{\pi}{4}} \frac{\cos x |\sec x - \cos x|}{\cos x - \sec x} = \lim_{x \to \frac{\pi}{4}} \frac{\cos x |\csc x|}{\cos x} = \lim_{x \to \frac{\pi}{4}} -\cos(x)$$

$$= -\cos\left(\frac{\pi}{4}\right) = -\frac{\sqrt{2}}{2}$$

$$\frac{1}{2} - \lim_{x \to -1^{+}} \frac{1}{-1 + \sqrt{-x}} \left(\frac{x}{-x + 1}\right) = \lim_{x \to -1^{+}} \frac{1 - x^{+}|(x + 1)|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|(x + 1)|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|(x + 1)|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|(x + 1)|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|(x + 1)|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|(x + 1)|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|(x + 1)|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|(x + 1)|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|(x + 1)|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|(x + 1)|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|(x + 1)|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|(x + 1)|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|(x + 1)|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|(x + 1)|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|(x + 1)|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|(x + 1)|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|(x + 1)|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|(x + 1)|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|(x + 1)|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|(x + 1)|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|(x + 1)|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|(x + 1)|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 - x^{+}|}{-x - 1} = \lim_{x \to -1^{+}} \frac{1 -$$

$$\frac{1}{x^{2}} = \frac{1}{x^{2}} \left(x + \sqrt{x^{2} - 7x + 1} \right) \left(x + \sqrt{x^{2} - 7x + 1} \right) \left(x - \sqrt{x^{2} - 7x} \right)$$

$$\lim_{x \to \infty} \left(x + \sqrt{x^{2} - 7x + 1} \right) \left(x - \sqrt{x^{2} - 7x} \right)$$

$$\lim_{x \to \infty} \frac{(x + (x^2 - 7x + 1))(x - (x^2 - 7x + 1))}{(x - (x^2 - 7x + 1))(x - (x^2 - 7x + 1))} = \lim_{x \to \infty} \frac{x^2 + 7x - 1}{(x - (x^2 - 7x + 1))(x - (x^2 - 7x + 1))} = \lim_{x \to \infty} \frac{7x - 1}{(x - (x^2 - 7x + 1))(x - (x^2 - 7x + 1))} = \lim_{x \to \infty} \frac{7 - \frac{1}{x}}{1 - (1 - \frac{7}{x} + \frac{1}{x^2})} = \frac{7}{1 - (1 - \frac{7}{x} + \frac{1}{x^2})} = \infty$$

$$\lim_{x \to \infty} x + \lim_{x \to \infty} \sqrt{x^2 - 7x + 1}$$