1 Prove que $|a+b| \leq |a| + |b|$, para todos os $a, b \in \mathbb{R}$

se $|a| \leq 0$, $|a| + |b| \geq 0$; se $|a| > 0$, $|a| + |b| > 0$; se $|b| > 0$, $|a| + |b| > 0$; se $|b| \geq 0$, $|b| + |a| \geq 0$

se $|a| \leq 0$:

se $|b| \leq 0$:

se $b \leq 0$:

se $a \leq 0$, $|a+b| \geq 0$;

se $a > 0$, $|a+b| > 0$;

se $b > 0$:

se $a \leq 0$, $|a+b| \geq 0$;

se $a > 0$, $|a+b| > 0$;

~~O módulo da soma de duas variáveis é uma variável dependente,~~ enquanto a soma de dois módulos de variáveis independentes possui o dobro de chance de ser positiva, pois módulos são sempre positivos.

se $|A| \geq 0$ e $|B| \geq 0$, $|A| + |B| \geq 0$, sejam A e B quaisquer $\in \mathbb{R}$

porém, a soma de duas variáveis depende de seis casos: (cansei antes do nono)

para $A \geq 0$, se $B \geq 0$: $|A+B| = |A| + |B|$; $|A+B| \geq 0$, $|A| + |B| \geq 0$ B

para $A < 0$, se $B \geq 0$: $|A+B| \leq |B| + |A|$; $|A+B| \geq 0$, $|A| + |B| > 0$ $|A| \neq |B|$.

para $A < 0$, se $B < 0$: $|A+B| < |B| + |A|$; $|A+B| > 0$, $|B| + |A| > 0$ D

para $A > 0$, se $B < 0$: $|A+B| < |B| + |A|$; $|A+B| \geq 0$, $|B| + |A| > 0$ $|A| + |B|$

$|A+B| \geq 0$, $|B| + |A| \geq 0$ D

2 Determine os valores de x que resolvem a equação $|x-1| + |x-3| = 4$ sabendo que $x > 1$

todo x

para: $|x-1| + |x-3| = 4$ se, e somente se, $x > 1$.

$0 < |x-1|$ se $x > 1$

$2 < |x-3|$ se $x > 1$

$0 + 2 = 2$

$|x-1| < |x-3|$

(Algo > 0) + (Algo > 2) = (Algo ≥ 4)

$0 \leq |x-3|$ se $x \geq 3$

$1 \leq |x-1|$ se $x \geq 2$

$0 + 1 = 1$

$2 \leq |x-1|$ se $x \geq 3$

$1 \leq |x-3|$ se $x \geq 2$

$0 + 1 = 1$

se $x \geq 3$: $\underbrace{|x-3|}_{\geq 0} + \underbrace{|x-1|}_{\geq 2} \geq 2$

se $x \geq 2$: $\underbrace{|x-3|}_{\geq 1} + \underbrace{|x-1|}_{\geq 1} \geq 2$

$3 \leq |x-1|$ se $x \geq 4$

$1 \leq |x-3|$ se $x \geq 4$

$3 + 1 = 4$

se $x \geq 4$: $\underbrace{|x-3|}_{\geq 1} + \underbrace{|x-1|}_{\geq 3} \geq 4$

$f(x) = x^2 - 2x + 3$

$f(4) = 4^2 - 2(4) + 3 = 2$

$f(0) = 0^2 - 2(0) + 3 = 2$

$f(-3) = -3^2 - 2(-3) + 3 = 18$

$f(a) = a^2 - 2a + 3 =$

$\sin(x) = 0{,}25$

$\sin^{-1}(0{,}25) = 0{,}25$

$\sin(\theta) = \sin(\pi - \theta)$

$-\pi + 0{,}25 = -2{,}89$

$\sin(\theta) = \sin(\theta + 2\pi)$

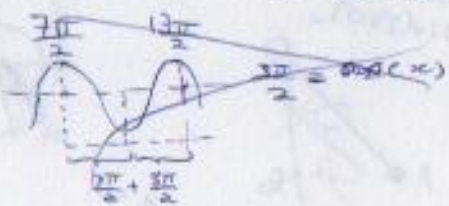
$x = -0{,}25 + \nu \cdot 2\pi$

$x = -2{,}89 + \nu \cdot 2\pi$

$\frac{7\pi}{2}$ to $\frac{13\pi}{2}$

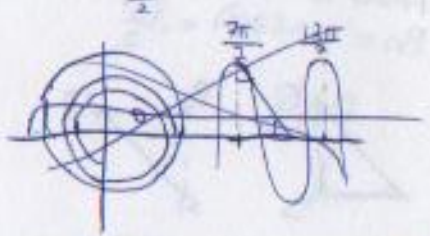
$\sin(x) = 0.95$

$\sin^{-1}(0.95) = 0.95$



$\frac{2\pi}{2} + \frac{3\pi}{2}$

$= \frac{5\pi}{2}$



$\sin^{-1}(0{,}95) \times \frac{\pi}{180} = 1{,}253233590$

$\sin(\theta) = \sin(\pi - \theta) = 1{,}888356\dots$

$x = 1{,}25 + \nu \cdot 2\pi$

$x = 1{,}89 + \nu \cdot 2\pi$

$\pi/4 = 1{,}536421201$

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$f(x) = x^2 - 2x + 3$

$f(4) = 4^2 - 2(4) + 3 = 11$

$f(0) = 0^2 - 2(0) + 3 = 3$

$f(-3) = (-3)^2 - 2(-3) + 3 = 18$

$f(a) = a^2 - 2a + 3 =$

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$\sin(x) = 0{,}25$

$\sin^{-1}(0{,}25) = 0{,}25$

$\sin(\theta) = \sin(\pi - \theta)$

$-\pi + 0{,}25 = -2{,}89$

$\sin(\theta) = \sin(\theta + 2\pi)$

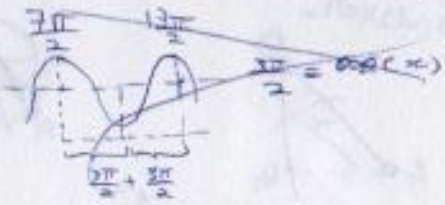
$x = -0{,}25 + \pi \cdot 2\pi$

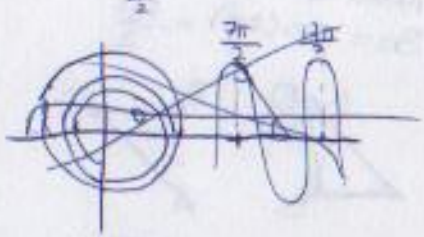
$x = -2{,}89 + \pi \cdot 2\pi$

630° 810° $\frac{6\pi}{2} = 3\pi$

$\frac{7\pi}{2}$ to $\frac{13\pi}{2}$ $\sin(x) = 0.95$

$\sin^{-1}(0{,}95) = 0{,}95$





$\sin^{-1}(0{,}95) \times \frac{\pi}{180} = 1{,}253423590$

$\sin(\theta) = \sin(\pi - \theta) = 1{,}88735676$

$x = 1{,}25 + \pi \cdot 2\pi$

$x = 1{,}89 + \pi \cdot 2\pi$

$\frac{\pi}{2} = 7{,}536421201$