0.2 Real Numbers

Tuesday, October 10, 2023 8:50 AM

Exp Evaluate if possible or state **meaningless**

المقام صفر

$\frac{\text{numerator}}{\text{denomanator}} = \frac{\text{بسط}}{\text{مقام}}$

① $\frac{\sqrt{3}}{0}$ meaningless

② $\frac{0}{\sqrt{3}} = 0$ ✓ $\quad \frac{0}{-1} = 0$, $\frac{0}{0.91} = 0$, ...

③ $\frac{\sqrt{3}}{\sqrt{3}} = 1$ ✓

④ $\frac{0}{0} =$ meaningless

⑤ $(-2)^3 + 1 = -2 \times -2 \times -2 + 1$

$= -8 + 1$

$= -7$

a) -7
b) 9
c) -9
d) 7

$= -7$

(6) $$\frac{(-1)(-2)-(4)(-3)}{-7+2} = \frac{2--12}{-5}$$

$$= \frac{14}{-5}$$

(7) $$-\frac{1}{3} + 5 - \frac{2}{3} + \frac{1}{4}$$

$$\frac{-1-2}{3} + 5 + \frac{1}{4} = \frac{-3}{3} + 5 + \frac{1}{4}$$

$$= -1 + 5 + \frac{1}{4}$$

$$= \frac{4}{1} \times \frac{4}{4} + \frac{1}{4}$$

$$= \frac{16}{4} + \frac{1}{4} = \frac{17}{4}$$

A priority in calculation: 1) Brackets ( )

2) Power $\frac{3}{2}$

→ 3) ×, ÷ from left to right

(4) + from left to

④ ± from left to right

Exp ① $((-2)^2 - 2) + 2 = (4 - 2) + 2$

$= 2 + 2$

$= 4$

② $8 \div 3(3+1-2)$

$8 \div 3(4-2) = 8 \div 3(2)$

$= (8 \div 3) \times 2$

$= \boxed{\frac{8}{3} \times \frac{2}{1}}$

ضرب بالكور لا يوجد توحيد مقامات

$= \frac{8 \times 2}{3 \times 1} = \frac{16}{3}$

$8 \div 6$

$\frac{8}{6} \div \frac{4}{3}$

a) $\frac{4}{3}$

b) $\frac{16}{3}$

c) ...

$a \times c$

$\frac{2}{3} \times \frac{3}{2} = \frac{2\times3}{3\times2} = \frac{6}{6} = 1$

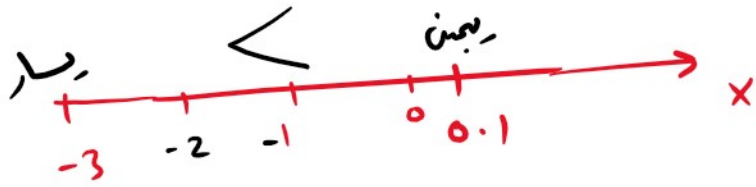
$$\frac{a}{b} \times \frac{c}{d} = \frac{a \times c}{b \times d}$$

$$\frac{2}{3} + \frac{3}{2} = \frac{2\times2}{3\times2} + \frac{3\times3}{2\times3}$$

$$= \frac{4}{6} + \frac{9}{6} = \frac{13}{6}$$

Exp Insert $<$, $>$, $=$

(1) $-3 \boxed{<} 0.1$

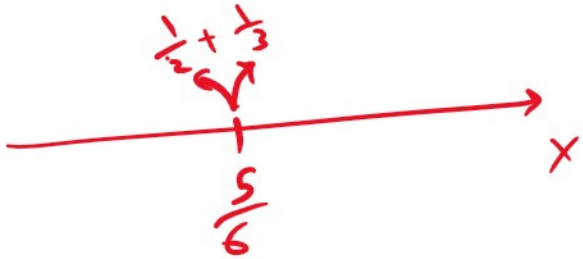


(2) $\frac{1}{2} + \frac{1}{3} \square \frac{5}{6}$ $\Rightarrow$ $\frac{5}{6} \boxed{=} \frac{5}{6}$

$\frac{1\times3}{2\times3} + \frac{1\times2}{3\times2}$

$\frac{3}{6} + \frac{2}{6}$

$\frac{5}{6}$



(3) $0.666 \boxed{<} \frac{2}{3}$

$0.666 \boxed{<} 0.666666\ldots$

$0.666 \boxed{<} 0.666666\ldots$

(4) $\pi \square 3.14$

$\pi \downarrow \frac{22}{7}$

$3.142857\ldots \boxed{>} 3.14$

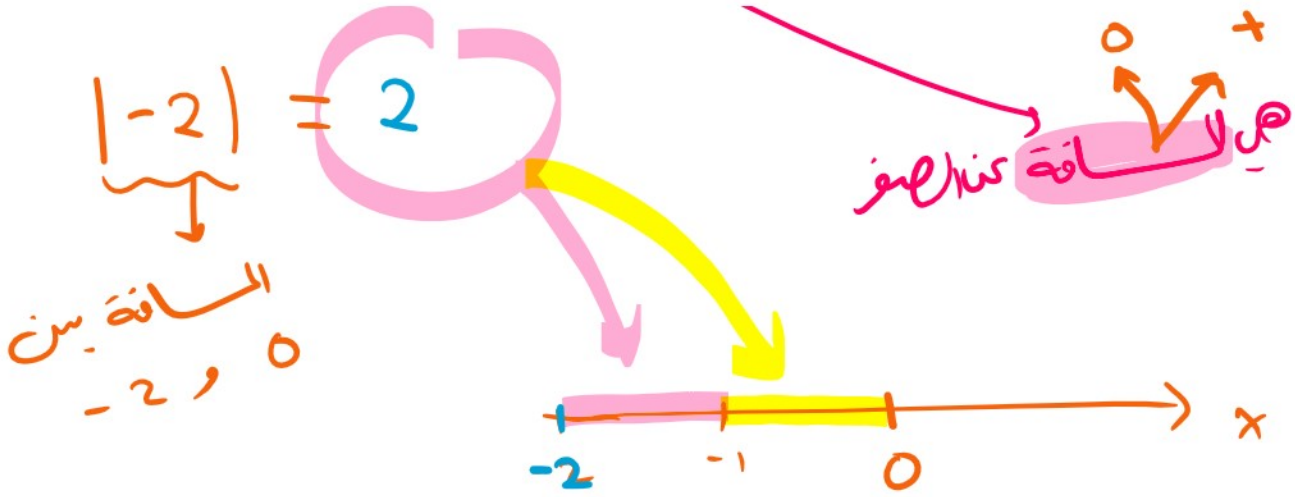
(5) $|-3| + |2| \square |-3+2|$

$3 + 2$ $\qquad$ $|-1|$

$5 \boxed{>} 1$

Absolute Value القيمة المطلقة

$|-2| = 2$



Exp ① $|4| = 4$

② $\left|-\frac{3}{2}\right| = \frac{3}{2}$

③ $|0.987| = 0.987$

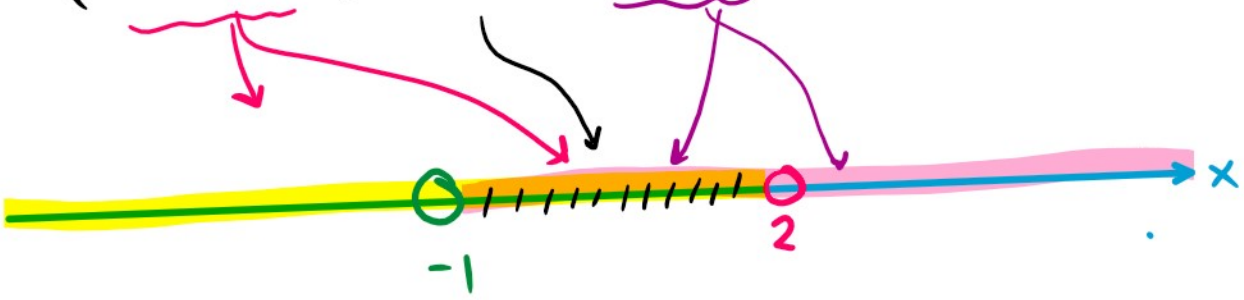
④ $|0| = 0$

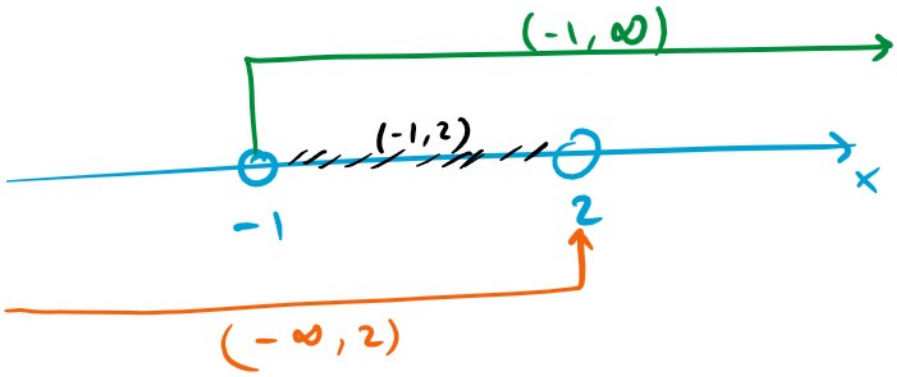
⑤ $|-\sqrt{5}| = \sqrt{5}$

$$|a| = \begin{cases} a & \text{if } a \geq 0 \\ -a & \text{if } a \leq 0 \end{cases}$$

Exp Find and graph

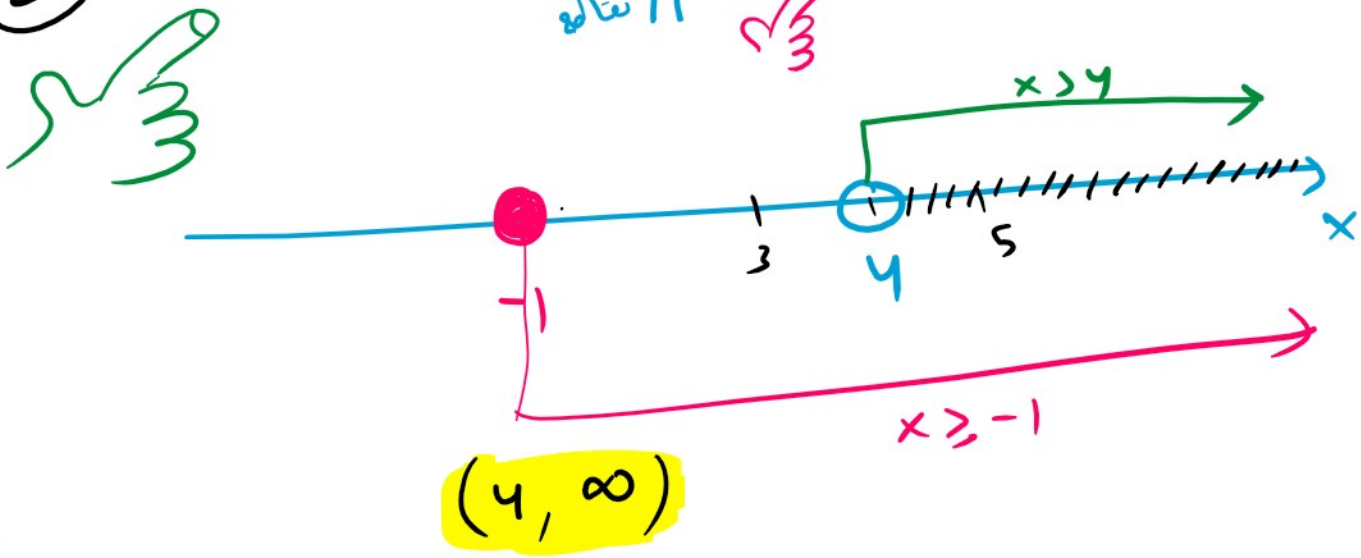
① $(-\infty, 2) \cap (-1, \infty) = (-1, 2)$





② $x > 4$ and $x \geq -1$

and تقاطع ∩



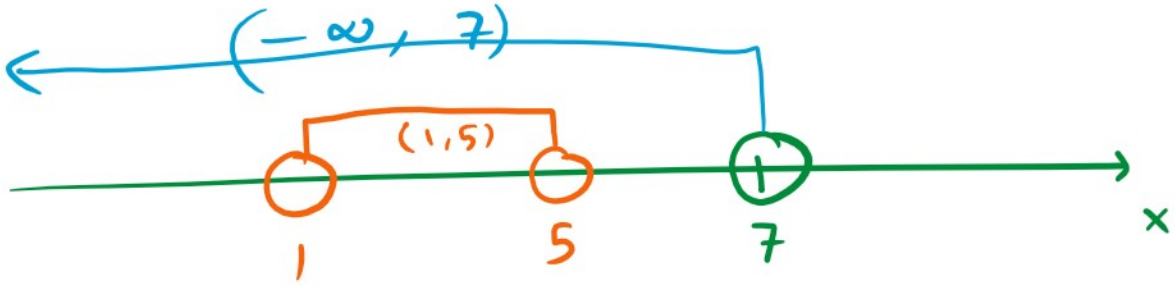
$(4, \infty)$

or ↘ || Union : اتحاد

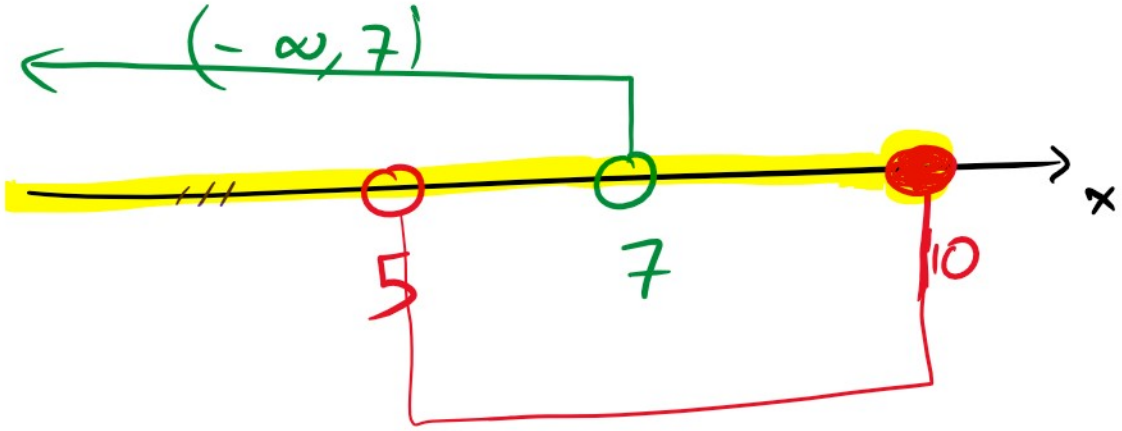
$\cup$ Union : اتحاد

and $\cap$ intersection : المشترك

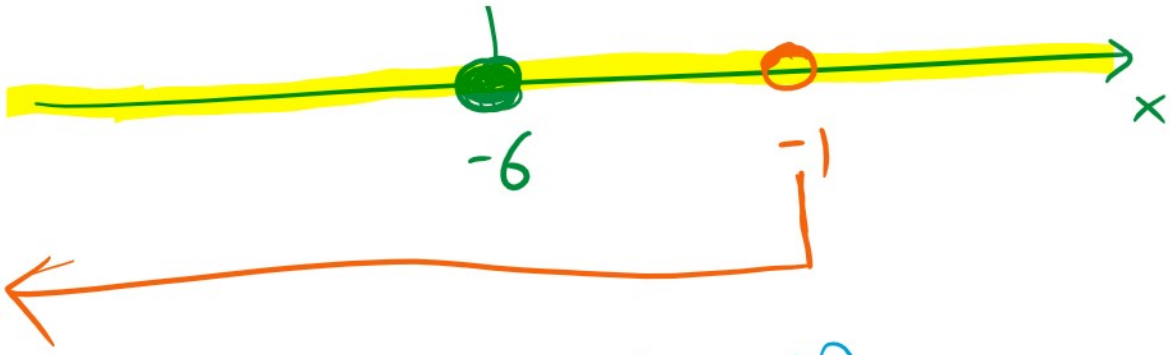
(3) $(-\infty, 7) \cup (1, 5) = (-\infty, 7)$



(4) $(-\infty, 7) \cup (5, 10] = (-\infty, 10]$



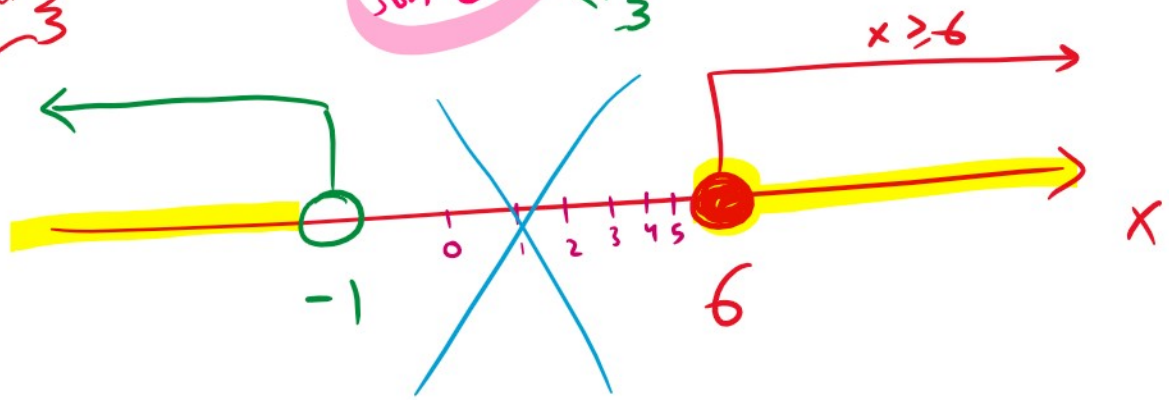
(5) $x \geq -6$ or $x < -1$



$(-\infty, \infty) = \mathbb{R}$

(6) $x \geq 6$ or $x < -1$

or = اتحاد U



$(-\infty, -1) \cup [6, \infty)$

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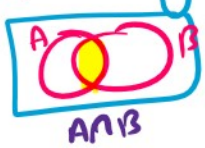
and $\cap$ intersection تقاطع



or $\cup$ uninon اتحاد