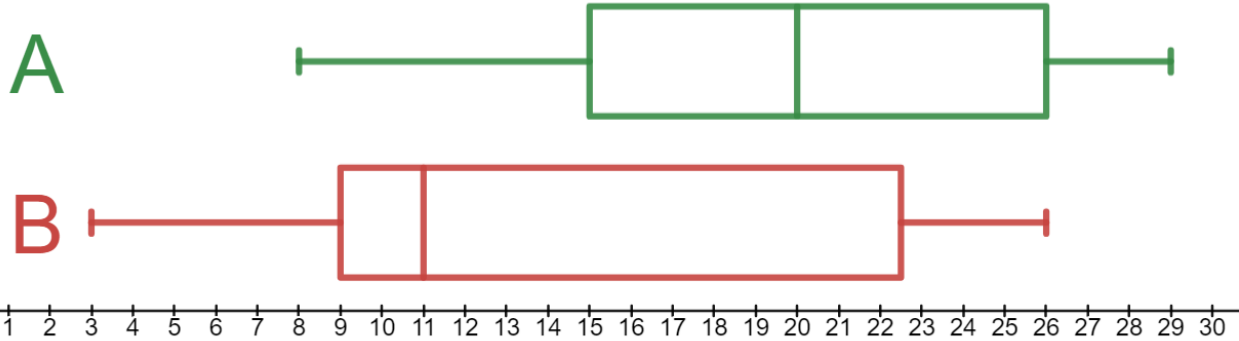


7 HARD Problems for the MAR 2024 DSAT (Problem Sette #5)

Video Solutions at: <https://youtu.be/AetlaXhWqlw>

Question 1



Each of the box plots shown summarizes a data set. If the two data sets are combined into one data set, what is the range of the combined data set?



Question 2

$$3x^2 + 18x + 3y^2 - 6y - 15 = 0$$

The equation above gives the graph of a circle in the xy -plane. If the circle is inscribed in a square, what is the area of the square?



Question 3

Movie Theater Chain	Number of Screens (thousands)
AMC	11
Cinepolis	5
Wanda	x
Cinemark	6
Regal	7
CGV	3
Cineworld	9
Cinemex	2

A table of popular movie theater chains is shown above. A movie theater chain is considered a BIG chain if it has more than 6,000 screens. The ratio of BIG chain screens to all screens is k to 5. If Wanda (a smaller chain) has a total of x thousand screens, which expression represents k in terms of x ?

A) $\frac{135}{43 + x}$

B) $\frac{43 + x}{135}$

C) $\frac{135 + x}{43}$

D) $\frac{43}{135 + x}$



Question 4

$$\frac{3}{2x + 7} - \frac{4x - 6}{5}$$

The above expression is equivalent to:

$$\frac{ax^2 + bx + c}{10x + 35}$$

Where a , b , and c are integer constants. What is the value of $a + b + c$?



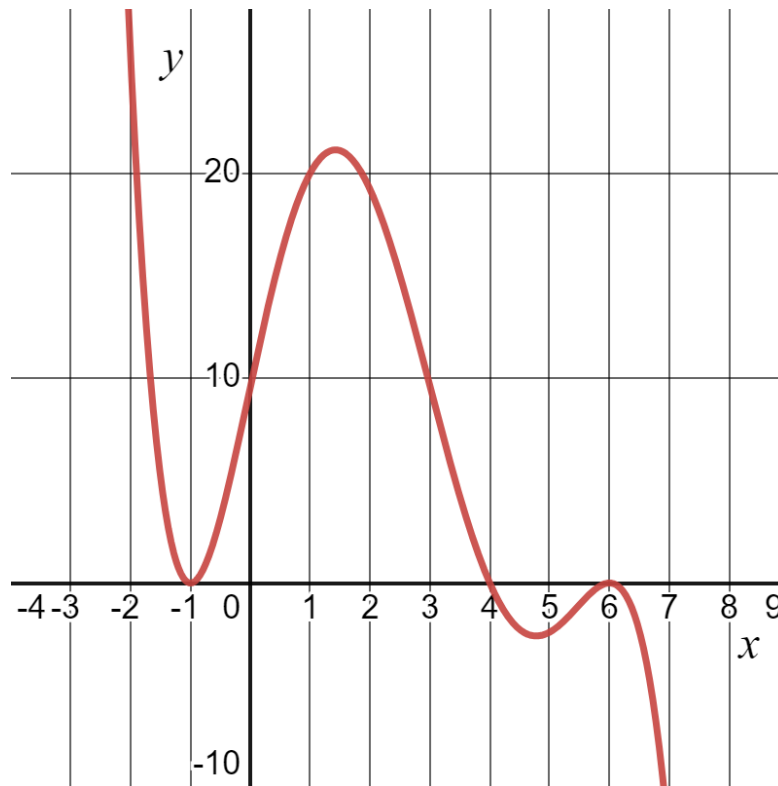
Question 5

The effectiveness of the Tutorllini Test Prep YouTube channel on student DSAT Math score improvement is being studied. A psychometrician selected 152 students for the study. The students were obtained from two randomly selected schools of 76 students each. The students from one school received access to many Tutorllini videos, while the students from the second school did not use Kyle's videos (they were encouraged to seek other sources). How should the experiment be changed to allow the researcher to conclude whether the Tutorllini videos have an effect on DSAT Math score improvement?

- A) All 152 students should receive access to Kyle's videos.
- B) One of the schools should study without a calculator.
- C) Half of the students from each school should be randomly assigned to each study plan.
- D) No changes to the experiment are needed.



Question 6



Which of the following could be the equation of the graph shown in the xy -plane?

- A) $y = -\frac{1}{15}(x - 6)(x - 4)^2(x + 1)$
- B) $y = -\frac{1}{15}(x - 6)^2(x - 4)(x + 1)^2$
- C) $y = -\frac{1}{15}(x + 6)(x + 4)^2(x - 1)$
- D) $y = -\frac{1}{15}(x + 6)^2(x + 4)(x - 1)^2$



Question 7

In right triangle XYZ , the length of side XZ is 8, the measure of angle Z is 90° , and the measure of angle Y is 56° . Which of the following represents the length of side YZ ?

A) $8 \sin(56^\circ)$

B) $8 \tan(56^\circ)$

C) $\frac{8}{\sin(56^\circ)}$

D) $\frac{8}{\tan(56^\circ)}$