

7 HARD Problems for the NOV 2023 DSAT (Problem Sette #3)

Video Solutions at: <https://youtu.be/fBZncq5Ukq8>

Question 1

$$A(t) = 2400(1.75)^{\frac{6}{5}t}$$

The given function A models the amount of money (in dollars) in an investment account t years after the account was opened. How long does it take the amount of money to increase to \$4200, in months?



Question 2

$$\begin{aligned}5x - 3y &= 8 \\ -40x + 24y &= -64\end{aligned}$$

For each real number r , which of the following points lies on the graph of each equation in the xy -plane for the given system?

- A) $(-\frac{r}{8} - 8, \frac{r}{8} + 64)$
- B) $(-\frac{3r}{5} + 8, \frac{3r}{5} - 64)$
- C) $(\frac{3r}{5} + \frac{8}{5}, r)$
- D) $(r, \frac{5r}{3} + \frac{8}{3})$



Question 3

An artist shades in her drawings at a rate of 1.3 square inches per second. What is this rate, in square decimeters per hour? (1 inch = 0.254 decimeter). Round your answer to the nearest tenth.

Question 4

In triangles PQR and XYZ , angles R and Z each have a measure of 38° . The length of side QR is equal to 11. The length of side YZ is equal to 27.5. Which additional piece of information is sufficient to prove that triangle PQR is similar to triangle XYZ ?

- A) The measure of angle P is 46°
- B) The length of side PR is 14 and the length of side XZ is 35
- C) The measure of angle Q is 49° and the measure of angle Y is 94°
- D) No additional information is necessary



Question 5

Point P lies on the unit circle and its position is determined by constructing an angle of $\frac{119\pi}{6}$ radians with the positive x -axis. What is the x -coordinate of Point P ?

- A) $-\frac{\sqrt{3}}{2}$
- B) $\frac{2\sqrt{3}}{3}$
- C) $\frac{\sqrt{3}}{2}$
- D) $-\frac{1}{2}$



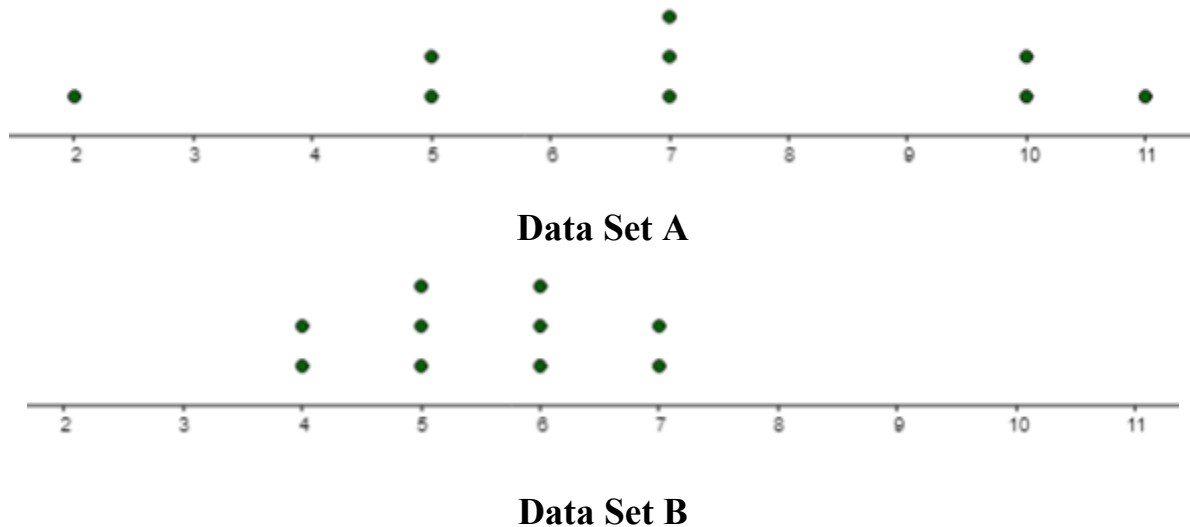
Question 6

$$y = 3x^2 - 5x - 12$$
$$40x - 4y = a$$

In the given system of equations, a is a positive constant. The system has exactly one distinct real solution. What is the value of a ?



Question 7



Dot plots for two data sets are shown. Data Set A contains 9 data values. Data Set B contains 10 data values. Which of the following is true about the data represented?

- A) The standard deviation of Data Set A is greater than the standard deviation of Data Set B.
- B) The standard deviation of Data Set B is greater than the standard deviation of Data Set A.
- C) The standard deviation of Data Set A is equal to the standard deviation of Data Set B.
- D) The standard deviation cannot be determined for either Data Set A or Data Set B.