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## Equivalent Complex Numbers Homework

Directions: Be sure to show all work, communicate your thought process, and justify your reasoning. Remember to check that your answers are complete, correct, and reasonable. Do not forget to complete the "Throwback" problems! :)

## $\infty$ Determine the values of the variables in each expression.

1. $7 y i-9+i^{2}=4 i-12 x$
2. $(i-2)^{2}+p=9-4 i$
3. $2-4 k i=8 k i-13+10 i-3 s$
4. $5 t-6 i+30=-20-42 v i$
5. $(i+7)^{2}+2 f=14 i-29$
6. $(5 i+4)(5 i-4)+5 v-m i=-201+4 i$

## THROWBACK!

1. 300 people were asked the average amount of time they spend driving each weekday. The results showed an average of 1.3 hours, with a standard deviation of .7 hours. The z-score for the amount of time Jason spends driving is -0.7. How many hours does Jason spend driving each weekday on average?
2. Order the data sets in terms of mean and standard deviation from least to greatest.


Standard Deviation: Data set $\qquad$ Data set $\qquad$ Data set $\qquad$ lowest highest
3. A collection of data shows that the average speed of cars on a highway is 67 miles per hour, with a standard deviation of 3.5 miles per hour.

Part A: Appropriately label $\mu, \pm 1 \sigma, \pm 2 \sigma$, and $\pm 3 \sigma$ on the curve.
Part B: Describe any interval of speeds that you would expect $34 \%$ of the cars to be traveling at.


Part C: If the speed limit on the highway is 60 mph , what percent of the cars would you expect to be speeding?
a. $50 \%$
b. $47.5 \%$
c. $97.5 \%$
d. $99.7 \%$

Part D: A police officer is directed to issue tickets to any cars traveling 14 mph above the speed limit or more. If data is collected for 250 cars, how many tickets would you expect the officer to issue?
a. 0
b. 6
c. 8
d. 12

## Selected Solutions:

## 1. $x=-5 / 6, y=4 / 7$

## 3. $\mathrm{k}=-5 / 6, \mathrm{~s}=5$

5. $\mathrm{f}=9.5$
6. A collection of data shows that the average speed of cars on a highway
7. is 67 miles per hour, with a standard deviation of 3.5 miles per hour

Part A: Appropriately label $\mu, \pm 1 \sigma, \pm 2 \sigma$, and $\pm 3 \sigma$ on the curve.
Part B: Describe any interval of speeds that you would expect $34 \%$ of the cars to be traveling at
$\begin{array}{lllllll}56.5 & 60 & 63.5 & 67 & 70.5 & 74 & 77.5\end{array}$
Part B:
63.5 to 67 mph

OR 67 to 705 mph
Part C: If the speed limit on the highway is 60 mph , what percent of the cars would you expect to be speeding?
a. $50 \%$
b. $47.5 \%$
c. $97.5 \%$
d. $99.7 \%$

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