SAT Intensive Workshop - Day 27

Tomas Matzner

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1 Today's Events

- Vocabulary quiz and Kahoot.
- Reading historical passages practice.
- Math section 3 practice exam.
- Essay Mechanics lecture.
- Reading section 1 practice exam.
- Lunch.
- Writing section 2 practice exam.
- Review of Reading section 1 from 15 July.
- Review of Writing section 2 from 15 July.
- Review of Math section 4 from 15 July.
- Practice essay.

As with yesterday, you should review the presentation I gave today on essay mechanics. It's on my Github under the name Basic Essay Mechanics.pdf.

Additionally, some of you expressed the desire to learn some Latin and Greek roots along with the daily vocabulary. I'll likely start assigning somewhere between five and 10 roots a day, but for those of you who want a bit more study, there's a pretty comprehensive list of Latin and Greek roots on my Github. It's in the "Outside-Materials" folder, under then name greek-and-latin-roots.pdf.

1.1 Review of Reading section 1 from 15 July

1.1.1 New words

- pedant (n) - someone excessively concerned with details.
- invective (n) - insulting or abusive language.
- queer (adj) - strange or odd.
- annihilate (v) - to completely destroy.
- affected (adj) - influenced by an external factor.
- dint (n) - a hollow in a surface.
- drudgery (n) - dull work.
- disparage (v) - to portray someone as being worth nothing.
- predicate (v) - to base something on.
- affluent (adj) - wealthy.

- oligarchy (n) - a small group of people that have total control.
- haven (n) - a safe place.
- alleviate (v) - to make less severe.
- myriad (adj) - many.
- venture (v) - to dare to do something unpleasant or dangerous.

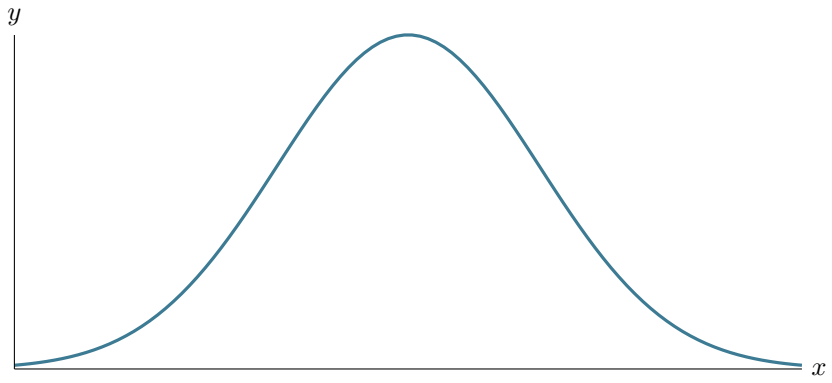
1.2 Review of Math section 4 from 15 July

We talked about normal distributions today.

Definition 27.1. A *normal distribution* is a distribution of data that follows the standard bell curve. In particular, it is symmetric around the mean.

Notation 27.2. The mean is generally denoted by the Greek letter μ, while the standard deviation is denoted by the Greek letter σ.

The normal curve looks like this:



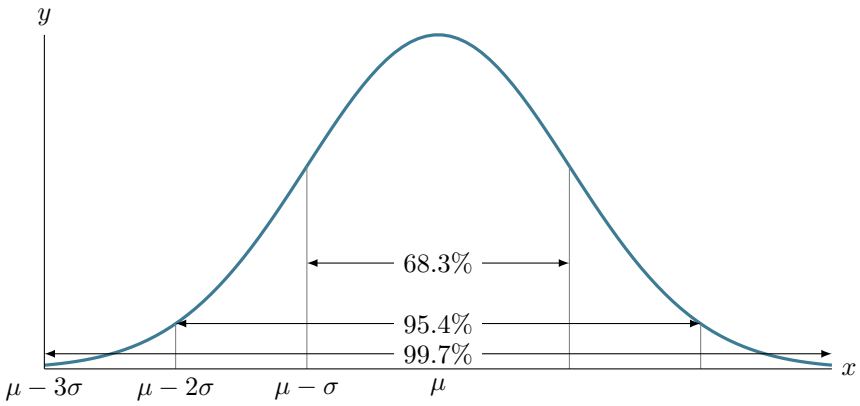
Typically, the x-axis indicates some value, and the y-axis indicates how many people hold or attain that value. So, we can think of the area under the curve of normal distribution as 100% of the people in the data distribution.

There is a quite powerful fact regarding standard deviations about the normal distribution.

Theorem 27.3. In a normal distribution, 68.3% of people lie within one standard deviation of the mean, 95.4% lie within two standard deviations of the mean, and 99.7% lie within three standard deviations of the mean.

For most practical purposes, we cut off the decimal point for one standard deviation and two standard deviations away – memorizing them as 68% and 95%, respectively.

This is quite a powerful theorem, because it tells us that, with very little error, the range of data for any normal distribution is 6σ. The diagram on the next page gives a pictorial representation of what is going on.



Since the normal distribution is symmetric, $\frac{99.7\%}{2} = 49.85\%$ of people lie between $\mu - 3\sigma$ and μ, as well as between μ and $\mu + 3\sigma$. Similarly, $\frac{95\%}{2} = 47.5\%$ of people lie between $\mu - 2\sigma$ and μ, as well as between μ and $\mu + 2\sigma$. Finally, $\frac{68\%}{2} = 34\%$ of people lie between $\mu - \sigma$ and μ, as well as between μ and $\mu + \sigma$.

Problem 27.4. If the mean of an approximately normal curve is 29926, the minimum value is 6000, and the maximum value is 58000, approximate the standard deviation of this set of data.

Proof. Note that the range of the data is $58000 - 6000 = 52000$. Since the range of a normal distribution is approximately 6σ, we get that $6\sigma = 52000$, so $\sigma \approx \boxed{8700}$.

Note, interestingly, that we didn't need the mean at all! □

2 Homework

2.1 Vocabulary

You should know the words in the "New words" section along with their definitions and how to use them in a sentence, along with the following five words from the Abraham Lincoln speech:

- assert (v) - to state a fact confidently.
- rescind (v) - to revoke or cancel.
- exigency (n) - an urgent need.
- audacity (n) - a willingness to take risks. Depending on context, also means rude or disrespectful behavior.
- acquiesce (v) - to accept reluctantly but without protest.

2.2 Latin and Greek Roots

Know the following Latin or Greek roots, their meanings, and at least 2 examples that use said root:

- *ab-, abs-*: From the Latin *ab*, means **away from**. Examples: abnormal, abrasion, absent, abstain, abstract.
- *acerb-*: From the Latin *acerbus*, means **sharp, bitter**, or **sour**. Examples: acerbic, exacerbate.
- *acr-*: From the Latin *acer* or *acris*, means **bitter, pungent, sharp,** or **sour**. Examples: acrid, acrimony.
- *acu-*: From the Latin *acus*, means **sharp**. Examples: acupunture, acute, acutifoliate.
- *aer-*: From the Greek *aer (αηρ)*, means **air** or **atmosphere**. Examples: aeronautics, aerosol, aerodynamic.