UNIT 2

6.) Use binomial theorem to expand the binomial $(2x+5)^3$. $8x^3+60x^2+150x+125$

7.) Divide: $(x^4-6x^3-40x+33)\div(x-7)$. $x^3+x^2+7x+9+\frac{96}{x-7}$

8.) Find the difference. $(2x^3-x^2+5x)-(-7x^4+4x^3-6x^2-2x+9)$ $7x^4-2x^3+5x^2+7x-9$

9.) If $f(x)=2x-7$ and $p(x)=x-4$, find $p(f(x))$. $2x-11$

10.) Given $f(x)=5x^3-3x^2+2x-7$ and $g(x)=x^3+4x-27$. What is $f(x)-g(x)$? $4x^3\ 3x^2-2x+20$

UNIT 3

11.) Find the zeros of the function: $f(x)=x^3-8x^2-23x+30$. $x=1$ $x=10$ $x=-3$

12.) Solve for x: $x^4=8x^3-12x^2$. $x=0$ mult of 2 $x=2$ $x=6$

13.) Find all the solutions of $x^4-11x^2+24=0$ $x=\pm2\sqrt{2}$ $x=\pm\sqrt{3}$

14.) How many zeros does the function have? Explain how you know. $f(x)=x^5+3x^3-6x^2-40$ 5 highest exponent.

15.) If one of the solutions of a polynomial equation is $-5-4i$, what is another solution?

$-5+4i$

6.2 Use Normal Distributions

Georgia Performance Standard(s)

MM3D2a, MM3D2b

Goal • Study normal distributions.

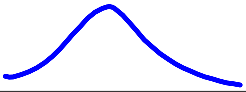
Your Notes

VOCABULARY

Normal distribution – a distribution that follows a bell curve

Normal curve – Symetric curve that follows the empirical rule

Standard normal distribution

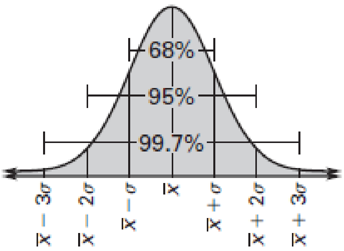


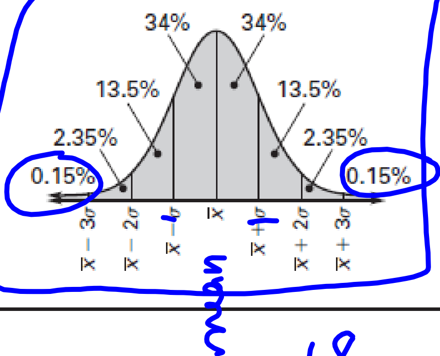
*z-score

AREAS UNDER A NORMAL CURVE

A normal distribution with mean $\bar{x}$ and standard deviation σ has these properties:

- The total area under the related normal curve is 1.
- About 68 % of the area lies within 1 standard deviation of the mean.
- About 95 % of the area lies within 2 standard deviations of the mean.
- About 99.7 % of the area lies within 3 standard deviations of the mean.





$34 + 13.5$

$\frac{95}{2} = 47.5$

$\frac{68}{2} = 34\%$

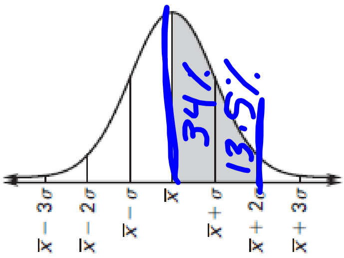
$95 - 68 = 27\%$

$\frac{27\%}{2} = 13.5$

Example 1 *Find a normal probability*

A normal distribution has mean $\bar{x}$ and standard deviation σ. For a randomly selected x-value from the distribution, find $P(\bar{x} \le \bar{x} \le \bar{x} + 2\sigma)$

prob.



Solution

The probability that a randomly selected x-value lies between $\underline{\bar{X}}$ and $\underline{\bar{X} + 2\sigma}$ is the shaded area under the normal curve. Therefore:

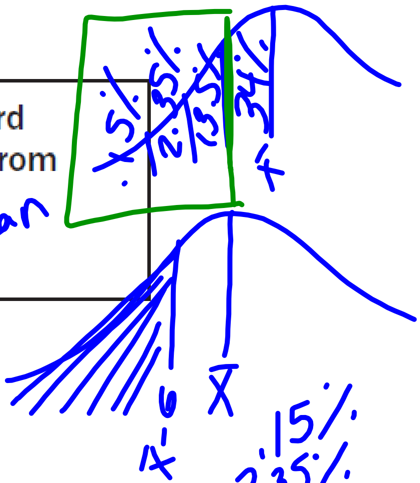
$P(\bar{x} \le x \le \bar{x} + 2\sigma) = \underline{34\%} + \underline{13.5\%} = \underline{47.5\%}$

Checkpoint Complete the following exercise.

1. A normal distribution has mean $\bar{x}$ and standard deviation σ. For a randomly selected x-value from the distribution, find $P(x \le \bar{x} - \sigma)$.

less

1 st. dev below mean

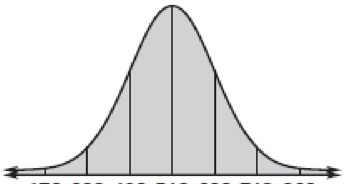


15%
2.35%
13.5%

16%

Example 2 ***Interpret normally distributed data***

Math Scores The math scores of an exam are normally distributed with a mean of 518 and a standard deviation of 115.



a. About what percent of the test-takers have scores between 518 and 748?

b. About what percent of the test-takers have scores less than 403?

Solution

a. The scores of 518 and 748 represent 1 standard deviations to the Right of the mean. So, the percent of the test-takers that have scores between 518 and 748 is 34 % + 13.5 % = 47.5 %.

b. A score of 403 is 1 standard deviation to the left of the mean. So, the percent of the test-takers that have scores less than 403 is .15 % + 2.35 % + 13.5 % = 16 %.