

Fin Rev Notes

June 13, 2018
11:05 AM

PMATH 12 – FINAL NOTE OUTLINE – CH 1-8

CHAPTER 1 – Polynomial Expressions and Functions

1. dividing

2. factoring

3. polynomial functions and equations

4. solve problems

CHAPTER 2 – Radical and Rational Functions

1. radical functions

2. rational functions

CHAPTER 3 – Transforming Graphs of Functions

1. translating

2. reflecting

3. stretch, compress

4. combinations

5. inverse

CHAPTER 4 – Combining Functions

1. combine functions – graphically

– algebraically

2. composite functions

CHAPTER 5 – Exponential & Logarithmic Functions

1. exponential – functions $y = ca^{d(x-h)} + k$

C = vert. st. \rightarrow $-C$ reflect x axis

$\frac{1}{d}$ = hor. st \rightarrow $-d$ " y axis

$h \leftrightarrow k$

$(x, y) \rightarrow (\frac{x}{d} + h, cy + k)$

– equations – solve $9^{x+1} = 243^{x+3}$

Same base

$$2x+2$$

$$5x+15$$

$$3 = 3$$

$$2x+2 = 5x+15$$

$$-3x = -13$$

$$x = \frac{13}{-3}$$

2. Logarithms – functions

$$\log_b c = a \text{ then } c = b^a$$

$$\log_b b^n = n$$

$$2^5 = 32 \Rightarrow \log_2 32 = 5$$

-laws – product

$$\log_b(xy) = \log_b x + \log_b y$$

quotient

$$\log_b \frac{x}{y} = \log_b x - \log_b y$$

power

$$\log_b x^k = k \log_b x$$

-equations

$$y = c \log_b d(x - h) + k$$

c = Vert. st \rightarrow $-c$ reflect x axis

d = hor. st \rightarrow $-d$ " y "

$h \leftrightarrow k$

$$(x, y) \Rightarrow \left(\frac{x}{d} + h, cy + k \right)$$

CHAPTER 6 – Trigonometry

1. trig ratios – standard position – 4 quads, CAST, 30, 45, 60

↓
6 ratios

$$\frac{S}{T} \mid \frac{A}{C}$$

Special Δ 's

(*) reference angles (*)

2. radian – π radians – 180 – RAD "mode" on calculator

$$0 \leq \leq 2\pi \text{ R}$$

$$0 \leq \leq 360 \text{ D}$$

3. trig functions – transformations

$$y = a \sin b(x - c) + d$$

$$y = a \cos b(x - c) + d$$

a = amplitude

$$b \Rightarrow \frac{360}{b} \text{ or } \frac{2\pi}{b} = \text{period}$$

$c \leftrightarrow d$ = midline ↓

CHAPTER 7 – Trigonometry Equations & Identities

1. solve trig equations – graph, algebra

$$\begin{array}{r} 7 + 2 \sin x = 4 \sin x + 5 \\ -7 - 4 \sin x \quad -4 \sin x -7 \\ \hline \end{array}$$

$$-2 \sin x = -2$$

$$\sin x = 1$$

$$\text{rad.} = 1.57$$

$$\text{deg.} = 90$$

2. Identities - reciprocal, quotient, Pythagorean, sum/diff, double angle (formula sheet)

verify $\rightarrow \theta = \frac{\pi}{6} \rightarrow$ subst.

prove \rightarrow use identities.

CHAPTER 8 - Permutations & Combinations

1. fundamental counting principal

2 nickels, 3 dimes, 5 quarters
of ways of picking 1 of each = $2 \times 3 \times 5 = 30$

2. permutations

$${}_nP_r = \frac{n!}{(n-r)!}$$

order matters

REPETITION

8 racers - placing 1st, 2nd, 3rd

$$\frac{10!}{2!2!2!}$$

E T I

3. combinations

$${}_nC_r = \frac{n!}{(n-r)!r!}$$

order does not matter

10 songs pick 7

$${}_{10}C_7 = \binom{10}{7}$$

4. binomial theorem

$$(x+y)^n = {}_nC_0 x^n + {}_nC_1 x^{n-1}y + {}_nC_2 x^{n-2}y^2 + \dots + {}_nC_{n-1} xy^{n-1} + {}_nC_n y^n$$

General term $(x+y)^n$ find the 'k'th term

$${}_nC_{k-1} x^{n-(k-1)} y^{k-1}$$

Pascal's Δ

1 1