

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 $y = ca^{d(x-h)} + k$

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

2. **Logarithms – functions** $\log_b c = a$ then $c = b^a$ $\log_b b^n = n$

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

CHAPTER 6 – Trigonometry

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

2. **radian – π radians – 180 – RAD “mode” on calculator**

3. **trig functions – transformations** $y = a \sin b(x - c) + d$ $y = a \cos b(x - c) + d$

CHAPTER 7 – Trigonometry Equations & Identities

1. **solve trig equations – graph, algebra**

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

CHAPTER 8 – Permutations & Combinations

1. fundamental counting principal

2. permutations

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

3. combinations

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

4. binomial theorem

$$(x + y)^n = {}_n C_0 x^n + {}_n C_1 x^{n-1} y + {}_n C_2 x^{n-2} y^2 + \dots + {}_n C_{n-1} x y^{n-1} + {}_n C_n y^n$$

General term

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

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