**PRECALCULUS MATH 11 – FINAL REVIEW**

**CHAPTER 1 – SEQUENCES AND SERIES (formulas)**

Arithmetic sequence $t\_{n}=t\_{1}+d(n-1)$

Arithmetic series $S\_{n}=\frac{n(t\_{1}+t\_{n})}{2} or S\_{n}=\frac{2n[2t\_{1}+d\left(n-1\right)]}{2}$

Geometric sequence $t\_{n}=t\_{1}r^{n-1}$

Geometric series $S\_{n}=\frac{t\_{1}(1-r^{n})}{1-r}$, r$\ne $1

Infinite geometric series $S\_{\infty }=\frac{t\_{1}}{1-r}$ , r between -1 and 1

**CHAPTER 2 – ABSOLUTE VALUES AND RADICALS**

Absolute value – definition $\left|5\left(4\right)-3\right|$

Simplify radical expressions $\sqrt{75} \sqrt{75a^{2}} \sqrt[4]{80e^{7}}$

Add/subtract/mult/divide radical expressions

$\sqrt{63}+\sqrt{40}-\sqrt{90}-\sqrt{28}$ $(4\sqrt{2}+2\sqrt{5})(3\sqrt{2}-\sqrt{5})$

$\frac{5\sqrt{7}+3}{\sqrt{7}}$ $\frac{4+2\sqrt{6}}{3\sqrt{2}-4}$

Solve radical equations $13=2\sqrt{x+1}-7$ isolate rad, square both sides, solve for x

**CHAPTER 3 – SOLVING QUADRATIC EQUATIONS**

Factor polynomial expressions – GCF, diff of squares, trinomials

Solve by – graphing Solving means finding the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 -factoring

 -square root principle

 -quad formula $x=\frac{-b\pm \sqrt{b^{2}-4ac}}{2a}$

**CHAPTER 4 – ANALYZING QUADRATIC FUNCTIONS**

Properties of – vertex, max/min. axis of sym, x/y intercepts, domain, range

Transform $y=a\left(x-p\right)^{2}+q y=ax^{2}+bx+c a\ne 0$

 a x-p p q

Equivalent forms – complete the square $3x^{2}-12x+7$

Problem solve – p320ex1

**CHAPTER 5 – GRAPHING INEQUALITIES & SYSTEMS OF EQUATIONS**

Solve & graph linear inequalities – 1 or 2 variables

$x-3y>6$ $3x^{2}+2x-1<0$

Quadratic inequalities – graphing

Systems of equations $y=x+4 y=x^{2}+x$ find point(s) of intersection

**CHAPTER 6 – TRIGONOMETRY**

Angles in standard position

Sine law $\frac{\sin(A)}{a}=\frac{\sin(B)}{b}=\frac{\sin(C)}{c}$

Cosine law $a^{2}=b^{2}+c^{2}-2bc cosA$

**CHAPTER 7 – RATIONAL EXPRESSION AND EQUATIONS**

Equivalent rational expressions – simplify expressions, NON-PERMISSIBLE values

$\frac{x-3}{x^{2}-9}$ $\frac{6x^{2}+12x}{3x}$

Add/subtract/mult/divide rational expressions

$\frac{x-2}{3x-21}÷\frac{3x^{2}-12}{3x^{2}-12x-63}$ $\frac{5}{2}-\frac{3}{4a^{2}}$ $\frac{7}{x^{2}-49}+\frac{3}{x^{2}+14x+49}$

Solve rational equations

$\frac{x+2}{x-5}=\frac{x}{x-1}$ $\frac{-10}{x^{2}-12x+35}=\frac{x}{x-5}$

**CHAPTER 8 – ABSOLUTE VALUE AND RECIPROCAL FUNCTIONS**

AV function $\left|x\right|=x if x\geq 0 or -x if x<0$

Solve AV equations $x+8= \left|4x+6\right|$

Reciprocal of linear and quadratic functions – ASYMPTOTES!!

$y=\frac{1}{x+3}$ $y=\frac{1}{x^{2}-2}$ $y=\frac{1}{x^{2}+2}$ $y=\frac{1}{-x^{2}-2}$