**A.P. Calculus –Summer Packet Solutions**

**Topic 1 Fractional and Negative Exponents**

 **Topic 2: Domains**

1. $\left(-\infty ,-\frac{1}{4}\right)\bigcup\_{}^{}\left(-\frac{1}{4},\infty \right)$ 2. $\left(-\infty ,-2\right)\bigcup\_{}^{}\left(-2,\infty \right)$ 3. $\left(-\infty ,-3\right)\bigcup\_{}^{}\left(-3,6\right)\bigcup\_{}^{}\left(6,\infty \right)$

4. $\left(-\infty ,0\right)\bigcup\_{}^{}\left(0,\infty \right)$ 5. $\left[3,\infty )\right.$ 6. $\left(\frac{9}{2},\infty \right)$

7. $\left[-5,\infty )\right.$ 8 $(-\infty ,-7] \bigcup\_{}^{} [2,\infty )$ 9. $(-\infty ,-5] \bigcup\_{}^{} [6,\infty )$

10. $\left[6,\infty )\right.$ 11 $D: \left\{\left(45+\left(n-1\right)360\right)°\right\}$

 12. All real numbers except: $\left(90+\left(n-1\right)360\right)°$ , and $\left(270+\left(n-1\right)360\right)°$

**Topic 3: Solving inequalities (absolute value)**

1. $f\left(x\right)=\left\{\begin{array}{c}-2x+4, \&x<2\\2x-4, \&x\geq 2\end{array}\right. $ 2. . $f\left(x\right)=\left\{\begin{array}{c}-2x-5, \&x<-3\\2x+7, \&x\geq -3\end{array}\right. $

3 . $f\left(x\right)=\left\{\begin{array}{c}-2x+2, \&x<\frac{1}{4}\\6x+4, \&x\geq \frac{1}{4}\end{array}\right. $ 4. $x>15 or x<9$

5. $x\leq 7 or x\geq 1$ 6. $x>-\frac{3}{5} or x<-1$ 7. $x>\frac{2}{3} or x<2$

8. $x>-2 or x<14$ 9.$ x\leq 1$

**Topic 4: Solving inequalities (quadratic)**

1. $f\left(x\right)=\left\{\begin{array}{c}x^{2}-1, x\leq -1\\-x^{2}+1, -1<x<1\\x^{2}-1, x\geq 1\end{array}\right.$ 2. $f\left(x\right)=\left\{\begin{array}{c}x^{2}+x-12, x\leq -4\\-x^{2}-x+12, -4<x<3\\x^{2}+x-12, x\geq 3\end{array}\right.$

3. $f\left(x\right)=\left\{\begin{array}{c}x^{2}+4x+4, x<-2\\-x^{2}-4x-4, x=-2\\x^{2}+4x+4, x>-2\end{array}\right.$ 4. $x\leq -4 or x\geq 4$

5. $x\leq -8 or x\geq 2$ 6. $x\leq -2 or x\geq 5$ 7. $2.6\leq x\leq .58$

8. $-4\leq x\leq -1$ 9. $0\leq x\leq π$

**Topic 5: Special Factorization**



**Topic 6: Function Transformation**

1. Vertical shift down 4 2. Horizontal shift right 4

3. Reflect across x; horizontal shift left 2 4. Vertical stretch by factor of 5; vertical shift up 3

5. Horizontal shrink by a factor of ½. 6. Reflect all negative values across x axis.

7-12…coming soon

**Topic 7: Factor Theorem (*p* over *q* method/synthetic division)**



**Topic 8: Even and odd functions**



**Topic 9: Solving quadratic equations and quadratic formula**



**Topic 10: Asymptotes**

1. VA: $x=3$ 2. VA: $x=\pm 1$ 3. No VA

 HA: $y=0$ HA: $y=0$ HA: $y=1$

4. VA: $x=\left\{-1,4\right\}$ 5. VA: $x=\left\{-6,0\right\}$ 6. VA: $x=\left\{-1,4\right\}$

 HA: $y=1$ HA: $y=0$ HA: $y=0$

7. . VA: $x=2$ 8. VA: $x=1$ 9. VA: $x=\pm √5$

 HA: $y=0$ HA: $y=2$ HA: $y=0$

**Topic 11: Complex Fractions**



**Topic 12: Composition of Functions**



**Topic 13: Solving Rational (fractional) Equations**



**Topic 14: Basic Right Triangle Trig**



**Topic 15: Solving Trigonometric Equations**

