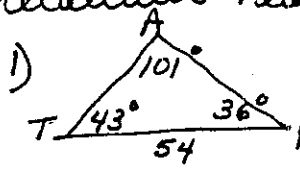
TAMPA BAY TECH INVITATIONAL – JANUARY 29, 2000
MASTER KEY

Individual						
Question #	**Algebra I**	**Geometry**	**Algebra II**	**Pre-Calculus**	**Calculus**	**Statistics**
1	B	D	C	B	B	C
2	A	B	C	D	B	D
3	D	A	C	D	A	A
4	D	D	D	A	C	E
5	D	C	D	D	B	A
6	C	B	A	D	C	D
7	B	A	A	C	C	D
8	A	A	B	B	E	A
9	C	B	B	C	D +C	C
10	D	C	A	D	D	E
11	B	B	B	E	B	B
12	A	D	C	D	A	A
13	E	A	B	B	B	C
14	C	C	A	D	A	A
15	D	A	A	A	C	D
16	B	B	C	B	B	C
17	C	A	C	A	D	D
18	B	C	B	D	B	B
19	A	A	B	E	D	E
20	C	B	A	A	C	B
21	D	B	B	A	C +B	C
22	B	D	C	D	D	C
23	D	C	C	B	C	D
24	C	D	C	D	C	A
25	D	A	C	C	D	C
26	C	C	A	C	A	B
27	A	B	D	A	A	C
28	A	C	B	A	D	E
29	B	D	A	C	A	B
30	D	A	D	A	E	C
Team						
1	-12	B & C	$^{181}/_{30}$	124	(-7,-6) U (4,6)	
2	$-\frac{70}{81}$	$^{24}/_{5}$	6	25	2,001,001	
3	20 nickles	27.193	1980	10	$^{1}/_{3}$ ft/sec	
4	3	$33.49x^3$	4700.4	83.95	-1	
5	-6	36	x-y	247.886	$\sqrt{3}+\frac{\pi}{6}$	
6	$5x^2 - 12$	89.8	1	1	12,285	
7	1	58.5°	8	3	-200	
8	½	9	63 apples	4	13	
9	10,12 or -10,-8	100	113	12	$^{32}/_{3}$	
10	$9x^2 - 2x + 5$	$^{19}/_{30}$	$-12\sqrt{3}$	$3,145,724\frac{7}{8}$	5	
11	17/5	228.8477	20,100	$\frac{2}{x^2}-1$ OR $\frac{2-x^2}{x^2}$	2	
12	21	4	$11\pm\sqrt{91}$	200	-2 cos(2x) - 2	
13	-4	30	532_6	cot x	4	
14	$x < -2$	19406	2x+2y	$4,468.92	$14x\sqrt{2+\cos^3(7x^2)}$	
15	$2x^2 - 11x - 6$	144	10	5	e	

PreCalculus Team

TBT Invitational
Jan. 29, 2000

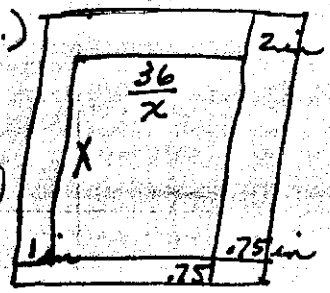
(124) 1) 

$\frac{54}{\sin 101} = \frac{P}{\sin 36°}$ $\quad P = 32.334$ $\quad \frac{54}{\sin 101} = \frac{t}{\sin 43}$ $\quad t = 37.517$ $\quad$ Perimeter $= 124$

(25) 2.) midpt. $(5,0)$; $m = 3/2$ $\quad m_\perp = -2/3$ so $2x+3y-10=0$

$D = \frac{4(5)+3(-3)-10}{5} = 2$ So $(2+3-10)^2 = \boxed{25}$

(10) 3.) Last 3 true So, $19+22+(-31) = 10$

4.) 

$A(x) = (x+2+.75)\left(\frac{36}{x}+.75+1\right)$ use calc.

(83.95) $\quad w(10.27)\ 14 \times (6.536)\ L \quad A = 67.14$

$A+w+L = 83.95$

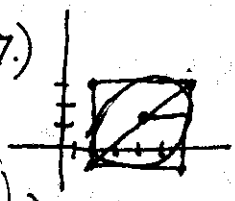
(247.886) 5.) $\frac{1}{2} = e^{50k}$ $\quad \frac{\ln .5}{50} = k$ $\quad P(20) = 240e^{\left(\frac{\ln .5}{50}\right)20} = 181.886$ $\quad 96 = 240e^{\frac{\ln .5}{50}t}$ $\quad t = 66$ weeks

Sum $= \boxed{247.886}$

(1) 6.) $A = [2(1)^3 - 1 + 5)(1+1+2) = 24$ $\quad 24 - 23 = (1)$

$B = h(j(x)) = 2(4-7x^2)+5$

$h(j(1)) = 2(-3)^2 + 5 = 23$

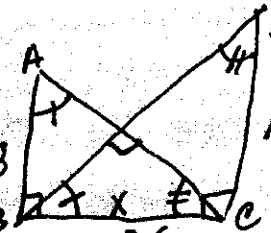
(3) 7.) 

midpt is center of diagonal $C(4,1)$ $\quad r = 2$ $\quad (x-4)^2 + (y-1)^2 = 4$

$x^2 + y^2 - 8x - 2y + 13 = 0$

$(ABCD) - E = 16 - 13 = (3)$

(4) 8) $A = 0$ $\quad B = 4 \mid 2 \quad -5 \quad -8 \quad -9$
$\qquad\qquad\qquad\quad\ \ 8 \quad 12 \quad 16$
$\qquad\qquad\qquad\quad\ \ 2 \quad 3 \quad 4 \quad 7$ (all positive) L.U.B. $\quad 0+4 = 4$

(12) 9.) 

$\triangle ABC \sim \triangle BCD$

$\therefore \ 8/x = x/18$ $\quad x^2 = 144$ $\quad (x = 12)$

3,145,724 7/8

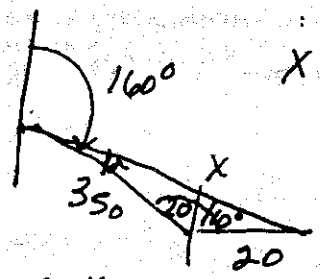
10.) $A = \frac{3(1-2^{20})}{1-2} = 3,145,725$

$\frac{-1/8}{} \ \frac{+1/4}{} \ \frac{-1/2}{} \ \frac{+1}{} \ \frac{-2}{} \ \frac{+4}{} \ \frac{-8}{}$
$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad 7^{th}$

$3,145,725 - 1/8 = 3,145,724\ 7/8$

2/ $x^2 - 1$ or $\frac{2-x^2}{x^2}$ 11.) $\cos(2\sec^{-1}x) = 2\{\cos(\sec^{-1}x)\}^2 - 1$

$2 \cdot \frac{1}{x^2} - 1 = \boxed{\frac{2}{x^2} - 1 \text{ or } \frac{2-x^2}{x^2}}$

200 12) 

$x = \sqrt{350^2 + 20^2 - 2(350)(20)\cos 110°}$

$x = 357$ miles

$\frac{\sin\alpha}{20} = \frac{\sin 110}{357}$ $\quad \alpha = 3°$ $\quad 160 - \alpha = 157$

$357 - 157 = 200$

cot x 13) $\frac{\cos x}{\sin x(\sin^2 x + \cos^2 x)} = \cot x$

14) $A = 2000e^{.134(6)} = \boxed{\#4,468.92}$

#4,468.92

(5) 15) $\frac{x}{A} + \frac{y}{A} = 1$ $\quad 2+3 = A$; $A = 5$ $\quad$ So $x+y-5=0$

$1 - 1 - 5 = (+5)$