Practice Questions for Math Club Team Competition

3:45pm Friday April 13 in room BR-43
We will form evenly matched teams as people arrive.
Questions will be on mixed levels.

1.Theta Level (≤ Math 161)

Team _____
1 MINUTE _____ 10 PTS
Check One: 2 MINUTES _____ 7 PTS
3 MINUTES _____ 5 PTS
Otherwise _____ 0 PTS

Solve for *x*: $9 + \frac{16}{x^2} = \frac{24}{x}$

answer _____

2.Theta Level (≤ Math 161)

Team _____
1 MINUTE _____ 10 PTS
Check One: 2 MINUTES _____ 7 PTS
3 MINUTES _____ 5 PTS
Otherwise _____ 0 PTS

Find 2A + B + C + 4D if
A is the slope of the equation of the line through the points (−1, 4) and (−3, 7),
B is the slope of the line with x-intercept 2 and y-intercept 5,
C is the x-coordinate of the point where the two lines meet,
D is the y-coordinate of the point where the two lines meet.

answer _____

3.Alpha Level (Math 162)

Team _____
1 MINUTE _____ 10 PTS
Check One: 2 MINUTES _____ 7 PTS
3 MINUTES _____ 5 PTS
Otherwise _____ 0 PTS

Find $\tan\alpha$ if $\sin\alpha = \frac{4}{5}$ and $0 < \alpha < \frac{\pi}{2}$ radians.

answer _____

4.Alpha Level (Math 162)

Team _____
1 MINUTE _____ 10 PTS
Check One: 2 MINUTES _____ 7 PTS
3 MINUTES _____ 5 PTS
Otherwise _____ 0 PTS

Find A + B + C if
A is the coefficient of x^5 in the expansion of $(x-2)^7$
B is the constant in the expansion of $\left(x-4-\sqrt{7}\right)(x-4+\sqrt{7}\,)$
C = $\left(-1+\sqrt{3}i\right)^3$ where $i^2 = -1$

answer _____

Practice Questions for Math Club Team Competition

5.Mu Level (≥ Math 171)

Team _____
1 MINUTE _____ 10 PTS
Check One: 2 MINUTES _____ 7 PTS
3 MINUTES _____ 5 PTS
Otherwise _____ 0 PTS

Evaluate: $\lim_{x\to 4} \frac{\sqrt{x}-2}{x-4}$

answer _____

6.Mu Level (≥ Math 171)

Team _____
1 MINUTE _____ 10 PTS
Check One: 2 MINUTES _____ 7 PTS
3 MINUTES _____ 5 PTS
Otherwise _____ 0 PTS

Find A + B if A = $\sum_{x=6}^{\infty} \frac{2}{x^2-8x+15}$
and B equals the slope of the line
tangent to $x^2 + y^2$= 25 at the point (3, 4).
Express final answer as a reduced fraction
of the form $\frac{a}{b}$ for integers a and b.

answer _____

7.Mixed Level History.

Some important names in the history of mathematics are:
Abel, Archimedes, Bernoulli, Bolyai, Bolzano, Boole, Bourbaki, Caley, Cantor, Cauchy, Dantzig, Dedekind, Euclid, Eudoxus, Euler, Descartes, Diophantus, Fermat, Fourier, G¨odel, Galois, Gauss, Green, Gregory, Hardy, Hippasus, Hypatia, Kline, Lagrange, Laplace, Lambert, Lebesgue, Leibniz, L'Hˆopital, Lobachevsky, Maclaurin, Mandelbrot, Napier, Newton, Pappus, Pascal, Pythagoras, Riemann, Rolle, Simpson, Snell, Stokes, Taylor, Thales, Theodosius, Turing, Weierstrauss, and Wiles.

In the nineteenth century the best selling math book was written by what mathematician?

8.Mixed Level Relay

Leg A Geometry hands off to Leg B Algebra who hands off to Leg C Algebra who hands off to Leg D Precalculus.
.
A. Four of the interior angles of a pentagon are each 120^o. The measure of the fifth interior angle in degrees is A. Find A.
B. The number that you receive is A. The solutions to $2x^2 = 37x$ + A are 20 and B. Find B.
C. The number that you receive is B. Solve 2CB^c = 9 for C.
D. The number that you receive is C. Find the smallest positive value for D such that CD is measured in degrees and sin(CD) = cos(CD).