

Math Team
Meet 1 Events C and D Problems #1-2 Practice 2016-18

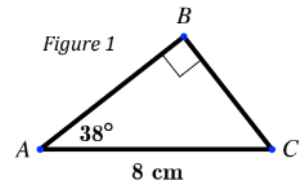
Event C

Problem #1 (“Quickie”; 1 point)

Try to solve each problem within one minute.

1. Determine exactly the value of $\sin \frac{\pi}{3} - \cos 3\pi$. (MSHSML 2015-16 1C #1)

1. *Figure 1* shows $\triangle ABC$ with $m\angle A = 38^\circ$ and $AC = 8$ cm. Calculate the length of \overline{AB} . [calculator allowed] (MSHSML 2014-15 1C #1)



Problem #2 (“Textbook”; 2 points)

Try to solve each problem within two minutes.

2. If $\tan A = -\frac{\sqrt{39}}{5}$ and $\cos A = \frac{5}{8}$, determine exactly the value of $1 + \sin^2 A$. (MSHSML 2015-16 1C #2)

2. If $\sin x = -\frac{1}{3}$ and $\pi < x < \frac{3\pi}{2}$, determine exactly the value of $\tan x$. [calculator allowed] (MSHSML 2014-15 1C #2)

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Event D

Problem #1 ("Quickie"; 1 point)

Try to solve each problem within one minute.

1. Let $f(x) = x + 3$ and $g(x) = x^2$. Determine exactly the value(s) of x for which $g(f(x)) = 0$. (MSHSML 2015-16 1D #1)

1. Determine exactly the sum of the roots of the cubic polynomial $2x^3 - 9x^2 + 14x - 6$. (MSHSML 2014-15 1D #1)

Problem #2 ("Textbook"; 2 points)

Try to solve each problem within two minutes.

2. Find the remainder when $2x^3 - 9x^2 + 14x - 6$ is divided by $x + 2$. (MSHSML 2015-16 1D #2)

2. Determine exactly the value of k for which the two solutions of $3x^2 - 4x + k = 0$ are equal. (MSHSML 2014-15 1D #2)