Math Team

Meet 3 Events C and D Problems #1-2 Practice 2016-17 and 2017-18

Event C

Problem #1 ("Quickie"; 1 point)

Try to solve each problem within one minute. Unless otherwise stated, no calculator is allowed.

1. The exact solution to "Find all x, $0 \leq x < 2\pi$, such that $\sin x = \frac{1}{3}$." is $x = \sin^{-1}\left(\frac{1}{3}\right)$ and $x = \pi - \sin^{-1}\left(\frac{1}{3}\right)$. Determine exactly the solution to "Find all x, $0 \leq x < 2\pi$, such that $\sin x = -\frac{1}{3}$." (MSHSML 2017-18 3C #1)

1. Determine exactly $\cos^{-1}\left(\frac{-1}{2}\right)$. (MSHSML 2016-17 3C #1)

Math Team
Meet 3 Events C and D Problems #1-2 Practice 2016-17 and 2017-18

Event C

Problem #2 ("Textbook"; 2 points)

Try to solve each problem within two minutes. Unless otherwise stated, no calculator is allowed.

2. Determine exactly the value of $\cos\left(2\sin^{-1}\left(\frac{2}{3}\right)\right)$. (MSHSML 2017-18 3C #2)

2. Write as an ordered pair (x, y) the point where $y = 3x - 4$ intersects its inverse. (MSHSML 2016-17 3C #2)

Math Team

Meet 3 Events C and D Problems #1-2 Practice 2016-17 and 2017-18

Event D

Problem #1 ("Quickie"; 1 point)

Try to solve each problem within one minute. Unless otherwise stated, no calculator is allowed.

1. Determine exactly the value of x: $3\log_x 16 = 4$. (MSHSML 2017-18 3D #1)

1. For what x value will $4\log_3 x = 4$? (MSHSML 2016-17 3D #1)

Event D

Problem #2 ("Textbook"; 2 points)

Try to solve each problem within two minutes. Unless otherwise stated, no calculator is allowed.

2. For $\frac{2^{9x}4^{x-1}}{16^{x^2}} = \frac{1}{32}$, x has two solutions, a and b. Determine $a + b$. (MSHSML 2017-18 3D #2)

2. The expression $\frac{3\left(3^{2n-1}\right)+9^{n-1}}{27^{\frac{2n}{3}-1}}$ can be written in the form $3^a + 3^b$. Determine exactly the sum $a + b$. (MSHSML 2017-18 3D #2)