# Warm-up:

1) Find the length of an arc with diameter 8 cm and angle measure $\frac{4\pi}{9}$ radians. 5.58

2) Use your unit circle to find the exact value of csc $\left(\frac{-2\pi}{3}\right)$.

$csc\ 24 = \frac{1}{-\frac{\sqrt{3}}{2} \cdot \frac{-2}{\sqrt{3}}} = \frac{-2}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$

$= \frac{-2\sqrt{3}}{3}$

3) Write the equation of a parabola with a directrix y = -5 and a focus at (2, -1). $y = \frac{1}{8}(x-2)^2 + 3$

4) The average test score was a 85 with a standard deviation of 10 the valued compared is 75, Find the z-score. $Z_1 = \frac{75-85}{10}$ $Z_1 = \frac{-10}{10} = -1$

5) using question four what percentage did the students score between 55-75 49.85%

NC Final Exam Question of the Day

9 What is the value of x in the triangle below?
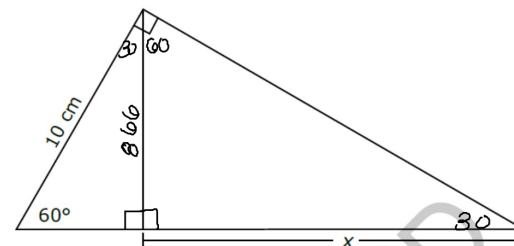
A $\frac{5\sqrt{3}}{2}$ cm

B $5\sqrt{3}$ cm

C 10 cm

D 15 cm

$\sin 60 = \frac{x}{10}$

$x = 10 \sin 60$

$x = 8.66$

$\tan 60 = \frac{x}{8.66}$

$x = 8.66 \tan 60$

$x = 14.99 \approx 15$

Final Exam Exit Ticket Review

1. You have created a new savings plan. you are going to save 3 pennies the first day, 6 pennies the second day, and 12 pennies the third day, If this pattern continues, how much money will you have in terms of dollars at the end of 15 days?

$a_1 = .03$ $n = 15$ $r = 2$

$S_n = \frac{.03(1-2^{15})}{(1-2)} = 983.01$

2. Suppose $f(x) = x^3 + 9x^2 + 11x + k$. The remainder of the division of p(x) by (x+2) is equal to 2. What is the remainder of the divison of p(x) by (x-2)

$-2\begin{array}{|rrrr} 1 & 9 & 11 & -4 \\ & -2 & -14 & 6 \\\hline 1 & 7 & -3 & 2 \end{array}$

$2\begin{array}{|rrrr} 1 & 9 & 11 & -4 \\ & 2 & 22 & 66 \\\hline 1 & 11 & 33 & R62 \end{array}$

3. A package designer wants to make an open box from a rectangular piece of cardboard, She will cut square corners out of the piece as indicated in the picture. The length of the side of one of these cut out is squares is x. The cardboard is to be folded up at the corners to create a box. Which of the following expressions gives the volume of the box.

8cm   20 cm
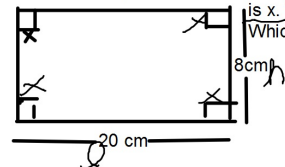
$V = l \cdot w \cdot h$

$l = 20 - 2x$ $w = x$

$h = 8 - 2x$

$V = x(20-2x)(8-2x)$

4. Simplify the following:

$\frac{\frac{\cos x}{\cos x} \cdot \frac{\cos x}{1} + \frac{\sin^2 x}{\cos x}}{\frac{1}{\cos x}}$

$\frac{\frac{\cos^2 x + \sin^2 x}{\cos x}}{\frac{1}{\cos x}}$

$= \frac{1}{\cos x} \cdot \frac{\cos x}{1}$

$= 1$

5. In a set of test score a score of 89 is one standard deviation above the mean. If a score of 77 is two standard deviations below the mean, what is the mean of the data?
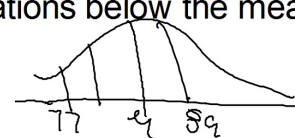
$89 - 77 = 12/3 = 4$ S.d

mean = 89 - 4 = 85

77   y   89

Unit 8 ~ Functions

Objectives: F.IF.2 & F.BF.1

Day 1: Functions & Composition of Functions

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example 1:

What is the value of g(-2) for the function g(x) = 3x + 2?

$$g(-2) = 3(-2) + 2$$
$$-6 + 2$$
$$-4$$

Your Turn:

What is the output of f(1) for f(x) = 2x + 5?

$$f(1) = 2(1) + 5$$
$$= 7$$

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example 2:

If f(1) = -6 and f(-1) = 8, which could be the function?

a) $x^2 - 6x$
b) $2x - 8$
c) $6x^3 - 2x - 1$
d) $x^2 - 7x$

$$x = 1 \quad y = -6$$
$$x = -1 \quad y = 8$$

$$(1)^2 - 7(1)$$
$$-6$$

$$(-1)^2 - 7(-1)$$
$$1 + 7 = 8$$

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example 3:

A function is shown below.

$$\begin{cases} x + 2, & x < -1 \\ x^2, & -1 \le x \le 2 \\ 3, & x > 2 \end{cases}$$
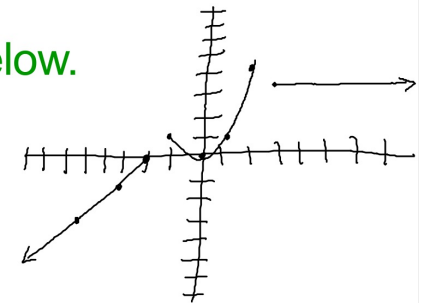
What is the value of the expression f(0) + 3f(-2) - f(3)?
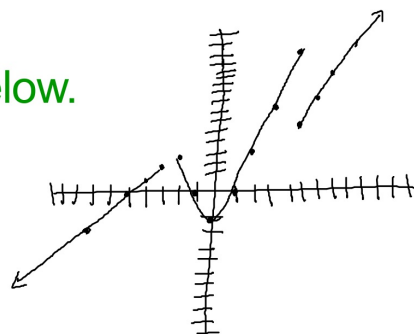
$$0^2 + 3(-2+2) - 3$$
$$0 + 3(0) - 3 = -3$$

A function is shown below.

$$\begin{cases} x + 5, & x < -2 \\ x^2 - 1, & -2 \le x \le 4 \\ x, & x > 4 \end{cases}$$

What is the value of the expression
f(-3) + 4f(-2) - f(7)?

$(-3+5) + 4((-2)^2 - 1) - 7$

$2 + 4(3) - 7$

$2 + 12 - 7 = 7$

COMPOSITION OF FUNCTIONS:

"putting two functions together"

$$(f \circ g)(x) = f(g(x))$$

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example 4:

If f(x) = x - 3 and g(x) = x^3, find
f(g(3)).

$g(3) = 3^3 = 27$

$f(27) = 27 - 3 = 24$

example 5:

If h(x) = 2x - 1 and g(x) = 3x + 1,
find (h∘g)(2).

$h(g(2))$

$g(2) = 3(2) + 1 = 7$

$h(7) = 2(7) - 1$

$h(7) = 13$

Your Turn:

If f(x) = 11x + 3 and g(x) = $\sqrt{x}$,
find (g∘f)(2).

$g(f(2))$

$f(2) = 11(2) + 2 = 25$

$g(25) = \sqrt{25} = 5$

example 6:

If f(x) = x^2 - 3 and g(x) = 6x, find g(f(x)).

$g(f(x)) = 6(x^2 - 3)$

$6x^2 - 18$