1. $\frac{4}{20k-12} * \frac{35k^2-21k}{4k^2}$

$20k-12=0$ $4k^2=0$

$k \neq \frac{3}{5}$ $k \neq 0$

$\frac{4}{4(5k-3)} \cdot \frac{7k(5k-3)}{4k^2}$

$\frac{7}{4k}$

2. $\frac{2x-6}{x+10} \div \frac{x^2-4x+3}{1-x}$

$x+10=0$ $1-x=0$

$x \neq -10$ $1 \neq x$

$\frac{2(x-3)}{x+10} \cdot \frac{-1(x-1)}{(x-3)(x-1)}$

$\frac{-2}{x+10}$

May 3-7:37 AM

## 11.1 Arithmetic Series

Look for a pattern

arithmetic sequence: the pattern is adding the same number

+4 +4 +4 +4 +4

-1, 3, 7, 11, 15, 19 $100^{th}$ term

How do you get the next term? $a_1+(n+1)\cdot d$

What is the pattern?

May 3-8:56 AM

Finite: stops

Infinite: goes on forever

May 3-8:57 AM

Common Difference:

d= the number you add to get to the next term

$a_1$ = first term

May 3-8:58 AM

Explicit Formula: the formula to find any term

$a_n = a_1 + (n-1)d$

$a_n = -1 + (n-1)4$

$a_n = -1 + 4n - 4$

$a_n = 4n - 5$

May 3-8:59 AM

Ex 1) 35,32,29,26

$d = -3$

$a_1 = 35$

$a_n = 35 + (n-1)-3$

$35 + -3n + 3$

$a_n = -3n + 38$

$a_{52} = -3(52) + 38$

$a_{52} = -118$

May 3-9:02 AM

Ex 2) $-3, -23, -43, -63$

$d = -20$

$a_1 = -3$

$a_n = -3 + (n-1)-20$

$a_n = -3 - 20n + 20$

$a_n = -20n + 17$

$a_{52} = -20(52) + 17$

$a_{52} = -1023$

May 3-9:02 AM

Sigma Notation or Summation Notation

Series: adding the terms of a sequence

May 3-9:02 AM

$\sum_{K=1}^{n} 2k+1$ upper limit, explicit formula, lower limit

the first value you plug in for k

May 3-9:03 AM

1. explicit formula
   $a_1 =$
   $d =$
2. lower limit 1st term = explicit formula solve for k
3. upper limit last term = explicit formula solve for n

May 3-10:18 AM

Ex 3) 5+7+9+...+17

1. $a_1 = 5$ $d = 2$

   $5 + (n-1)2$

   $5 + 2n - 2$

   $2n + 3$

2. lower limit

   $5 = 2k + 3$

   $-3 \quad -3$

   $2 = 2k$

   $1 = k$

3. upper limit

   $17 = 2n + 3$

   $-3 \quad -3$

   $\frac{14}{2} = \frac{2n}{2}$

   $7 = n$

May 3-9:05 AM

$\sum_{k=1}^{7} 2k+3$

$5 + 7 + 9 + 11 + 13 + 15 + 17$

May 3-10:21 AM

Ex 4) $37+43+31+\ldots+13$

1. $a_1 = 37$, $d = -3$, $37-3n+3$, $-3n+40$, explicit formula
2. $37 = -3k+40$, $k = 1$ lower limit
3. $13 = -3n+40$, $n = 9$ upper limit

$$\sum_{k=1}^{9} -3k+40$$

May 3-9:05 AM

Review Questions

1.4 Binomial expansion

$(a+b)^0$: 1

$(a+b)^1$: 1 1

$(a+b)^2$: 1 2 1

$(a+b)^3$: 1 3 3 1

May 3-9:05 AM

△#'s

1st 1, 2nd 3, 3rd 3, 4th 1

$1 \cdot (5v)^3 \cdot (1)^0 = 125v^3$

$3 \cdot (5v)^2 \cdot (1)^1 = 75v^2$

$3 \cdot (5v)^1 \cdot (1)^2 = 15v$

$1 \cdot (5v)^0 \cdot (1)^3 = 1$

$15v$

$125v^3+75v^2+15v+1$

$(5v+1)(5v+1)(5v+1)$

May 3-8:58 AM

(14) $x^3-2x^2-41x$

$x(x^2-2x-41)$

$a=1$ $b=-2$ $c=-41$

$$\frac{2 \pm \sqrt{(-2)^2-4(1)(-41)}}{2(1)}$$

$$\frac{2 \pm \sqrt{168}}{2}$$

$168 = 4 \cdot 42$, $42 = 2 \cdot 3 \cdot 7$

May 3-10:44 AM

$$\frac{2 \pm 2\sqrt{42}}{2}$$

$x = 1+\sqrt{42}$ $\quad x = 1-\sqrt{42}$

$-1 \quad -1 \quad -\sqrt{42}$

$(x-1-\sqrt{42})(x-1+\sqrt{42})$

$x(x-1-\sqrt{42})(x-1+\sqrt{42})$

May 3-10:47 AM

(23) $(n^3+9n^2+12n+3) \div (n+2)$

$n^2+7n-2$

$-(n^3+2n^2)$

$7n^2+12n+3$

$-(7n^2+14n)$

$-2n+3$

$-(-2n-4)$

$7$

$n^2+7n-2+\frac{7}{n+2}$

May 3-10:49 AM