Missing!

A lot of 3.3 II's & 3.6 II's

S'3.3 II #s 43, 47, 51, 61, 65, 67, 69, 70

S'3.6 II #s 95-113 ODD

If you turned in II's with I's, separate them and re-submit the II's

---

(13 Test Let's Do another take-home over Thanksgiving.

I'll give it to you Monday. Due Monday.

84 Turkey. A posteriori.

① $|2x-3| < 7$

② $|2x-3| = 7$

③ $|2x-3| \leq 7$

---

④ Re-write x^2-6x-7 in the form $a(x-h)^2+k$ and sketch its graph. Show vertex & x- & y-intercepts.

---

⑤ Evaluate $2 + 6 + 18 + \cdots + 486$

⑥ Evaluate $\sum_{k=1}^{\infty} 3\left(\frac{1}{5}\right)^{k-1}$

⑦ Evaluate $\sum_{k=1}^{36} 500\left(1+\frac{.07}{12}\right)^{k-1}$

① $|2x-3| < 7$

$2x-3 < 7$ AND $2x-3 > -7$

$2x < 10$ AND $2x > -4$

$\{x \mid x < 5$ AND $x > -2\}$ ← Good

$= \{x \mid -2 < x < 5\}$

$x \in (-2, 5)$

② $|2x-3| = 7$

$2x-3 = \pm 7$

$2x = 3 \pm 7$

$x = \frac{3 \pm 7}{2}$ → $\frac{10}{2} = 5$, $\frac{-4}{2} = -2$

$x \in \{-2, 5\}$

③ $|2x-3| \leq 7$

$x \in [-2, 5]$

$= \{x \mid x \leq 5$ and $x \geq -2\}$

Ands ors in math: conditions for membership.

4! $|2x-3| \geq 7$

$2x-3 \geq 7$ OR $2x-3 \leq -7$

$2x \geq 10$ $2x \leq -4$

$\{x \mid x \geq 5$ OR $x \leq -2\}$

$(-\infty, -2] \cup [5, \infty)$

⑤ $|2x-3| < -7$ $\emptyset$

⑥ $|2x-3| > -7$ $\mathbb{R}$

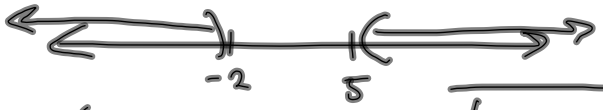
If you Know how to solve, but aren't seeing it:

$|2x-3| < -7$

$2x-3 < -7$ AND $2x-3 > 7$

$2x < -4$ $2x > 10$

$\{x \mid x < -2$ AND $x > 5\}$



$(-\infty, -2) \cap (5, \infty) = \emptyset$ Yes!

$|2x-3| > -7$ $\mathbb{R}$

$2x-3 > -7$ OR $2x-3 < 7$ Yeh.

$2x > -4$ $2x < 10$

$\{x \mid x > -2$ OR $x < 5\}$

$= (-\infty, \infty) = \mathbb{R}$

④ Re-write x^2-6x-7 in the form $a(x-h)^2+k$ and sketch its graph. Show vertex & x- & y-intercepts.

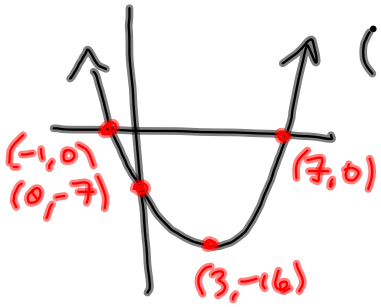
$x^2-6x-7 = x^2-6x+3^2-9-7$

$= (x-3)^2-16$ Set $=0$

$(x-3)^2=16$

$x-3=\pm 4$

$x=3\pm 4$ → 7, -1



x^2-6x-7

$a=1, b=-6, c=-7$

$-\frac{b}{2a} = -\frac{-6}{2} = 3$

$f(3) = 3^2-6(3)-7$

$= 9-18-7$

$= -16$ ⇝ $(3,-16) = (h,k)$

$k=-16$

$+k=-16$

$1(x-h)^2+k$

$= (x-3)^2-16 = 0$

$(x-3)^2=16$, etc.

(5) Evaluate $2+6+18+\cdots+486 = 728$

Is it geometric?

$\frac{6}{2}=3$, $\frac{18}{6}=3=r$ = common ratio Yes

$a=2$

So, we have $2+2\cdot3+2\cdot3^2+\cdots+486$

$= \sum_{k=1}^{?} 2(3)^{k-1}$

$486 = ar^{n-1} = 2\cdot3^5$

$n-1=5$

$n=6$

$\sum_{k=1}^{6} 2\cdot3^{k-1} = a\left(\frac{r^n-1}{r-1}\right)$

$= 2\left(\frac{3^6-1}{3-1}\right)$

$= 2\left(\frac{729-1}{2}\right)$

$= 2\left(\frac{728}{2}\right) = 728$

$3^6 = 729$

2 | 486
3 | 243
3 | 81
3 | 27
3 | 9
3

R Practice Probs on this material: §8.3 #s 9-21, 73-79

BONUS

Alternating

$2-6+18-\cdots-486$

How to handle THIS?

$\frac{-6}{2}=-3$, $\frac{18}{-6}=-3=r$

$\sum_{k=1}^{6} 2(-3)^{k-1} = 2\left(\frac{(-3)^6-1}{-3-1}\right) = a\left(\frac{r^n-1}{r-1}\right)$

$= 2\left(\frac{728}{-4}\right) = -364$

⑥ Evaluate $\sum_{k=1}^{\infty} 3\left(\frac{1}{5}\right)^{k-1}$

$\frac{1}{1000000000000}$

0 when $0 < r < 1$

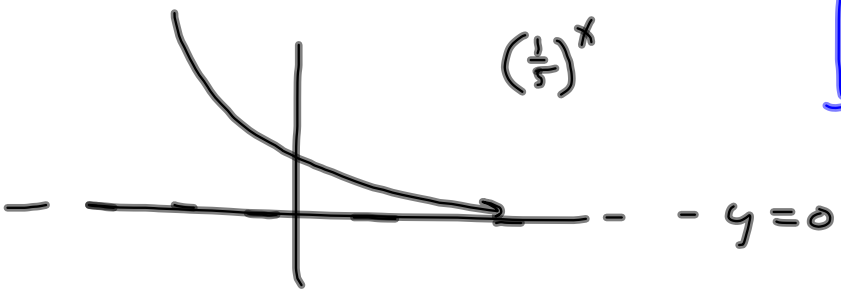
$a = 3,\ r = \frac{1}{5}$ $\qquad a\left(\frac{r^n - 1}{r - 1}\right) = ?$

$n = \infty$!?

Look: $\left(\frac{1}{5}\right)^n \xrightarrow{n \to \infty}$

$\sum_{k=1}^{\infty} a_k = \lim_{n \to \infty} \sum_{k=1}^{n}$

$3\left(\frac{-1}{\frac{1}{5} - 1}\right) = ?$



(7) Evaluate $\sum_{k=1}^{36} 500\left(1+\frac{.07}{12}\right)^{k-1} = S$

$a=500,\ r=\left(1+\frac{.07}{12}\right),\ n=36$

$\Rightarrow S = a\left(\frac{r^n-1}{r-1}\right) = 500\left(\frac{\left(1+\frac{.07}{12}\right)^{36}-1}{\left(1+\frac{.07}{12}\right)-1}\right)$

$= 500\left(\frac{\left(1+\frac{.07}{12}\right)^{36}-1}{\frac{.07}{12}}\right)$

$\approx \$19{,}965.05$

$^{3}36$
500
$18{,}000$