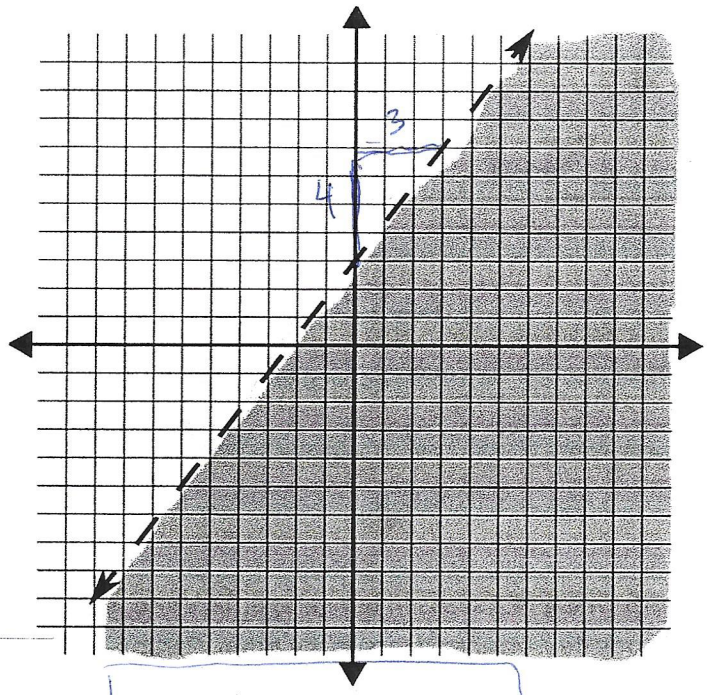
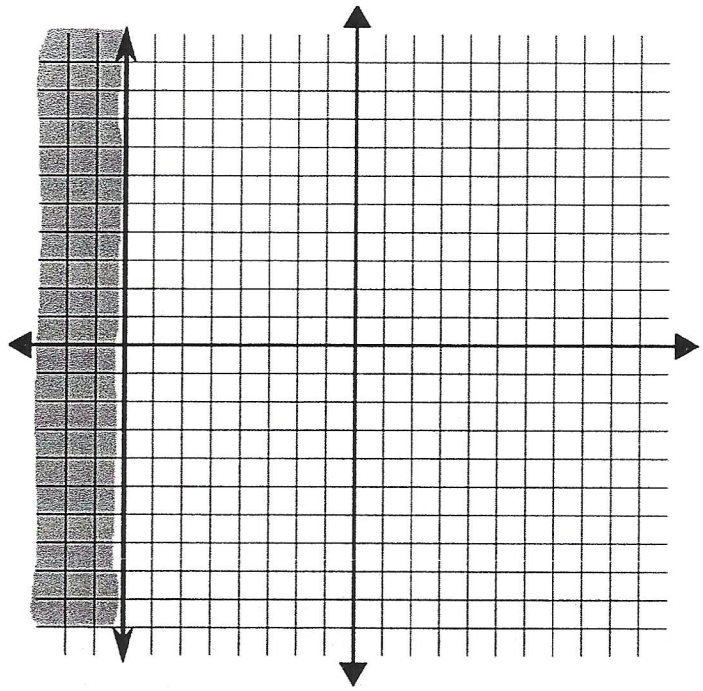
DAC

8A Review Day 4

Write an inequality for each of the following graphs.



$y < \frac{4}{3}x + 3$



$x \leq -8$

Find the first four terms of the following sequences.

$\begin{cases} f(n) = -3 + f(n-1) \\ f(1) = 22 \end{cases}$

$f(1) = 22$ $\quad f(3) = 16$

$f(2) = 19$ $\quad f(4) = 13$

$g(n) = \frac{3}{5} \cdot (-5)^{n-1}$

$g(1) = \frac{3}{5}$ $\quad g(3) = 15$

$g(2) = -3$ $\quad g(4) = -75$

Write an equation for the line passing through the following points.

$(-6, 12)$ and the origin $(0,0)$

slope: $\frac{12-0}{-6-0} = \frac{12}{-6} = -2$

$y = -2x$

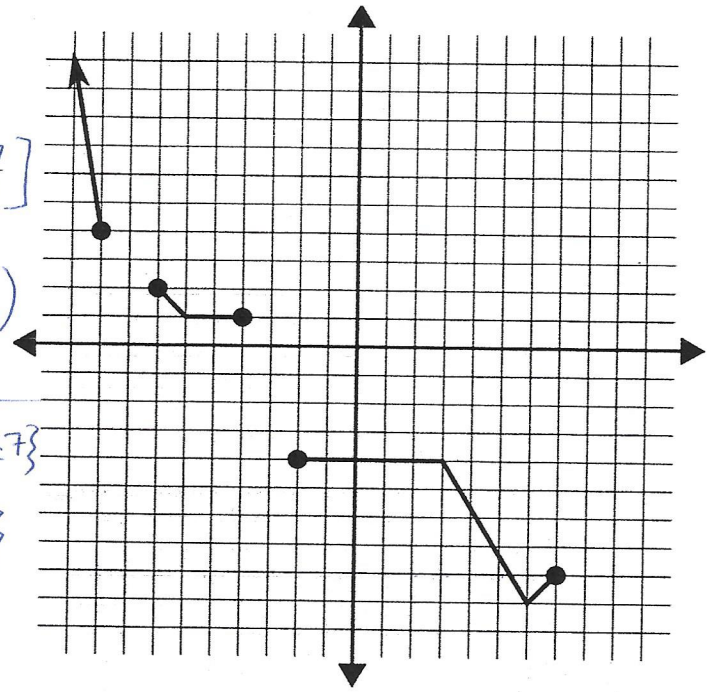
$(5, 8)$ and $(-3, 14)$

slope: $\frac{14-8}{-3-5} = \frac{6}{-8} = \frac{3}{-4}$

$f(x) = \frac{-3}{4}(x-5) + 8$

$f(x) = \frac{-3}{4}(x+3) + 14$

Write the domain and range of the function in interval notation and in set notation.



D: $(-\infty, -9] \cup [-7, -4] \cup [-2, 7]$

R: $[-9, -4] \cup [1, 2] \cup [4, \infty)$

D: $\{x \in \mathbb{R} \mid x \leq -9 \text{ or } -7 \leq x \leq -4 \text{ or } -2 \leq x \leq 7\}$

R: $\{y \in \mathbb{R} \mid -9 \leq y \leq -4 \cup 1 \leq y \leq 2 \cup 4 \leq y\}$

Esther decides to pursue a career in nuclear medicine and starts performing PET scans in her garage. To do so, she obtains 433 kilograms of Carbon-11, a radioisotope often used to study neurotransmitters in the brain. Carbon-11 has a half-life of 20 minutes. Write an equation for a function modeling the amount of Carbon-11 remaining after x minutes.

$\sqrt[20]{1/2} \approx 0.9659$

$f(x) = 433 \cdot 0.9659^x$

How much Carbon-11 is left after 5 hours?

0.013 Kg

When will there be less than a gram of Carbon-11 left?

≈ 374 minutes

About 6 hours 14 minutes

Write the solution set for each inequality in interval form.

$-3x + 5 + x \geq 11x - 18$

$-2x + 5 \geq 11x - 18$

$23 \geq 13x$

$\frac{23}{13} \geq x$

$\boxed{\left(-\infty, \frac{23}{13}\right]}$

$5(-x + 4) < 6 - 2(-3x + 1)$

$-5x + 20 < 6 + 6x - 2$

$-5x + 20 < 6x + 4$

$16 < 11x$

$\frac{16}{11} < x$

$\boxed{\left(\frac{16}{11}, \infty\right)}$