Cumulative Review 11/20

①

Rational		Irrational
$3.4\overline{56}$	$\sqrt{81}$	$\sqrt{50}$
0	$\sqrt{1.69}$	2π
$\sqrt{\frac{4}{9}}$		$\sqrt{\frac{2}{9}}$
$.38$		

② A) $\frac{1}{5}x + 13 + x = \frac{-1}{10}(x + 40) + 4$

$\frac{1}{5}x + 13 + x = \frac{-1}{10}x - \frac{40}{10} + 4$

$10\left(\frac{1}{5}x + 13 + x\right) = \left(\frac{-1}{10}x - \frac{40}{10} + 4\right)10$

$2x + 130 + 10x = -1x - 40 + 40$

$130 + 12x = -1x$

$-12x \quad -12x$

$\frac{130}{-13} = \frac{-13x}{-13}$

$-10 = x$ One Solution

(A)

③ $3 \neq 4$ means there is no solution. 3 does not equal 4.

④ B

⑤ C

⑥ A

⑦ A

⑧ B

⑨ C

⑩ * Tells us to multiply mass and speed.

$(3.3 \times 10^4)(3.2 \times 10^3)$ (mass, speed)

$(3.3 \times 3.2)(10^4 \times 10^3)$

$10.56 \times (10^{4+3})$

$10.56 \times 10^7 = \boxed{1.056 \times 10^8}$

(11) 4.5×10^2 (1 second)

How long?

$$\frac{1.8 \times 10^{10}}{4.5 \times 10^2} = \frac{1.8}{4.5} \times 10^{10-2}$$

$$.4 \times 10^8$$

4×10^7 seconds

(12) $0.\overline{74} = \frac{74}{99}$ $0.\overline{74}$ is rational because it can be written as a fraction. Any number that can be written as a fraction is rational.

(13) $3^3x^2 \cdot 4x^5$

$27x^2 \cdot 4x^5$

$108x^2 \cdot x^5$

$108x^{2+5}$

$= 108x^7$

C

(14) $3^2 \cdot 3^{-3} = 3^{2+-3}$

$= 3^{2-3}$

$= 3^{-1} = \frac{3^{-1}}{1} = \frac{1}{3}$ B

(15) $8y^{-2} = \frac{8(y^{-2})}{y^2} = \frac{8}{y^2}$ D

(16) $4(x-1) - 3x = -2x - 4 + 3x$

$4x - 4 - 3x = -2x - 4 + 3x$

$-4 + x = x - 4$

$-4 + x - x \mid x - 4 - x$

$-4 = -4$

infinitely many D

(17) $(3^4)^2 = 3^{4 \cdot 2} = \boxed{3^8}$

(18) $4a \times 4a \times 4a$

$= 4 \cdot 4 \cdot 4 \times a \times a \times a$

$\boxed{64a^3}$

(19)

x	y
0	-7
2	-3
4	1
6	5

← y-intercept is always when $x = 0$

$b = -7$

$m = \frac{y_2 - y_1}{x_2 - x_1}$ $(4,1)(6,5)$ $x_1\ y_1\ x_2\ y_2$

$\frac{5-1}{6-4} = \frac{4}{2} = 2$

$m = 2$

Equation: $y = 2x - 7$

(20) $m = \frac{1}{3}$ $\frac{\text{rise}}{\text{run}}$

$b = -3$ y-intercept

(21) $y = 4x - 10$ x to see if an ordered pair lies on a graph plug in each one for (x, y). If both sides of the equation equal, the point is on the line.

(A) $(4, -10)$ x y

$-10 = 4(4) - 10$

$-10 = 16 - 10$

$-10 \neq 6$

no

(B) $(4, 6)$ x y

$6 = 4(4) - 10$

$6 = 16 - 10$

$6 = 6$

Yes!

$\boxed{B}$

(C) $(-4, 6)$ x y

$6 = 4(-4) - 10$

$6 = -16 - 10$

$6 \neq -26$

no

(D) $(-4, 10)$ x y

$10 = 4(-4) - 10$

$10 = -16 - 10$

$10 \neq -26$ no

(22) $b = 2$ $\quad y = mx + b$

$m = -2$ $\quad y = -2x + 2$

C

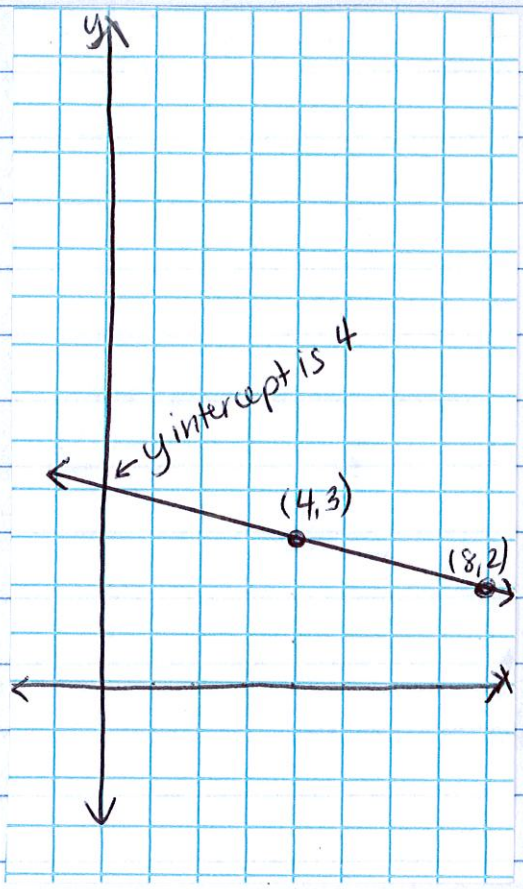
(23) $(4, 3)(8, 2)$

$x_1\ y_1\ x_2\ y_2$

$$m = \frac{2-3}{8-4} = \frac{-1}{4}$$

$b = 4$

$$y = -\frac{1}{4}x + 4$$



1. I found the slope
2. Plotted the points
3. Found y-intercept
4. Wrote equation in $y = mx + b$.

(24) $(2.5 \times 10^8)(1.2 \times 10^7)$

$(2.5 \times 1.2)(10^8 \times 10^7)$

$3 \times (10^{8+7})$

$\boxed{3 \times 10^{15}}$

(25) $(8.25 \times 10^8) \div (1.5 \times 10^{-2})$

$$\frac{8.25 \times 10^8}{1.5 \times 10^{-2}} = \frac{8.25}{1.5} \times 10^{8-(-2)}$$

$5.5 \times 10^{8+2}$

$\boxed{5.5 \times 10^{10}}$