11-6-19 1st Trig

① Give the equation in SIF that goes through

(-2, 6) (-4, -2)

$m = \frac{\Delta y}{\Delta x} = \frac{6 - -2}{-2 - -4}$

$= \frac{8}{2}$

$= 4$

$y - y_1 = m(x - x_1)$

$y - 6 = 4(x + 2)$

$y - 6 = 4x + 8$

$+6 \quad +6$

$y = 4x + 14$

② Which are in standard form?

(A) $x - y = -8$ Yes

(B) $3x + 8 = y$ No

(C) $-4x + y = 10$ No

(D) $y = 3x - 1$ No

(E) $2x - y = \frac{1}{3}$ No

③ What is the slope between

(2, n) (4, n+12).

$\text{Slope} = \frac{\Delta y}{\Delta x} = \frac{n - (n+12)}{2 - 4} = \frac{n - n - 12}{-2}$

$= \frac{-12}{-2}$

$= 6$

④ Give the midpoint between

$(3, n+2)$ $(7, n+8)$

$$\left(\frac{3+7}{2}, \frac{n+2+n+8}{2}\right)$$

$$\left(5, \frac{2n+10}{2}\right)$$

$$(5, n+5)$$

⑤ $$\sum_{n=2}^{n=4} 2^n - 3n$$

$n=2$ $\quad 2^2 - 3\cdot 2 = -2$

$n=3$ $\quad 2^3 - 3\cdot 3 = -1$

$n=4$ $\quad 2^4 - 3\cdot 4 = 4$

$$\overline{\qquad\qquad 1}$$

⑥ Distance from $(-4, -2)$ and $(-7, -10)$.

$$D = \sqrt{\Delta x^2 + \Delta y^2}$$

$$\sqrt{(-4 - -7)^2 + (-2 - -10)^2}$$

$$\sqrt{3^2 + 8^2}$$

$$\sqrt{73}$$

$$\approx 8.5$$

⑦ Give the equation of the line that is $\perp$ to $y = -4x + 7$ and goes through $(-8, 12)$

$y - y_1 = m(x - x_1)$

$y - 12 = \frac{1}{4}(x + 8)$

$y - 12 = \frac{1}{4}x + 2$

$+12 \quad +12$

$y = \frac{1}{4}x + 14$

$y = -4x + 7$

$m = -4 \therefore \perp m = \frac{1}{4}$

⑧ Give the equation of the line that is $\perp$ to $2x + y = 8$ and goes through $(-10, -24)$.

$y - y_1 = m(x - x_1)$

$y - -24 = \frac{1}{2}(x + 10)$

$y + 24 = \frac{1}{2}x + 5$

$-24 \quad -24$

$y = \frac{1}{2}x - 19$

$2x + y = 8$

$-2x \quad -2x$

$y = -2x + 8$

↑ slope

$\therefore \perp m = \frac{1}{2}$

⑨ $\frac{218!}{219!} = \frac{218 \cdot 217 \cdots 2 \cdot 1}{219 \cdot 218 \cdots 2 \cdot 1}$

$\frac{1}{219}$

⑩ $\frac{8!\ 6!\ 5!}{9!\ 7!\ 4!}$

$\frac{8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1 \quad 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1 \quad 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}{9 \cdot 8 \cdots 2 \cdot 1 \quad 7 \cdot 6 \cdots 2 \cdot 1 \quad 4 \cdot 3 \cdot 2 \cdot 1}$

$\frac{5}{63}$

⑪ Put $y = \frac{2}{5}x + \frac{1}{4}$ in standard form.

$-\frac{2}{5}x \quad -\frac{2}{5}x$

$-20\left[-\frac{2}{5}x + y = \frac{1}{4}\right]$

$8x - 20y = -5$

$\frac{-20}{1} \cdot \frac{-2}{5} = \frac{40}{5}$

$\frac{-20}{1} \cdot \frac{1}{4} = \frac{-20}{4}$

(12) Put in standard form.

$$\frac{3x + 12y = 15}{3}$$

$$x + 4y = 5$$

(13) Give the equation that goes through (2, 5) and (−1, 14).

$y - y_1 = m(x - x_1)$

$m = \frac{\Delta y}{\Delta x}$

$\frac{14 - 5}{-1 - 2} = \frac{9}{-3}$

$= -3$

$y - 5 = -3(x - 2)$

$y - 5 = -3x + 6$

$+5 \qquad +5$

$y = -3x + 11$

11-6-19 3rd Trig

① Give the equation that goes through $(-3,4)$ and $(-5,10)$.

$\frac{4-10}{-3+5} = \frac{-6}{2} = -3$

$y - y_1 = m(x - x_1)$

$m = \frac{\Delta y}{\Delta x} = \frac{10-4}{-5+3}$

$= \frac{6}{-2}$

$= -3$

$y - 4 = -3(x + 3)$

$y - 4 = -3x - 9$

$+4 \quad +4$

$y = -3x - 5$

② $\frac{8! \cdot 6! \cdot 4!}{9! \cdot 5! \cdot 3!}$

$\frac{8 \cdot 7 \cdots 2 \cdot 1 \quad 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1 \quad 4 \cdot 3 \cdot 2 \cdot 1}{9 \cdot 8 \cdots 2 \cdot 1 \quad 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1 \quad 3 \cdot 2 \cdot 1}$

$\frac{24}{9} = \frac{8}{3}$

③ $\frac{214!}{215!}$

$\frac{214 \cdot 213 \cdots 2 \cdot 1}{215 \cdot 214 \cdot 213 \cdots 2 \cdot 1}$

$\frac{1}{215}$

(4) Slope between $(2,n)(4,n+10)$

$$\text{slope} = \frac{\Delta y}{\Delta x} = \frac{n+10-n}{4-2} = \frac{10}{2} = 5$$

(5) midpoint between $(n,6)$ and $(n+4,16)$

$$\left(\frac{n+n+4}{2}, \frac{6+10}{2}\right)$$

$$\left(\frac{2n+4}{2}, \frac{16}{2}\right)$$

$$(n+2, 8)$$

(6) Find the distance from $(-4,-10)$ to $(-7,-18)$.

$$D = \sqrt{\Delta x^2 + \Delta y^2}$$

$$= \sqrt{(-4--7)^2 + (-10--18)^2}$$

$$= \sqrt{3^2 + 8^2}$$

$$= \sqrt{9+64}$$

$$= \sqrt{73}$$

$$\approx 8.5$$

(7) $\sum_{n=2}^{4} 2^n - 3n$

$n=2 \quad 2^2 - 3\cdot 2 = -2$

$n=3 \quad 2^3 - 3\cdot 3 = -1$

$n=4 \quad 2^4 - 3\cdot 4 = 4$

1

(8) Give equation that goes through $(-4, 6)$ and is $\perp$ to $4x + 2y = 10$.

$y - y_1 = m(x - x_1)$

$y - 6 = \frac{1}{2}(x + 4)$

$y - 6 = \frac{1}{2}x + 2$

$+6 \qquad +6$

$y = \frac{1}{2}x + 8$

$4x + 2y = 10$

$-4x \qquad -4x$

$\frac{2y}{2} = \frac{-4x + 10}{2}$

$y = -2x + 5$

$m = -2$

$\therefore \perp m = \frac{1}{2}$

(9) $(2, -4)\ (4, 6)$

slope $= \frac{\Delta y}{\Delta x} = \frac{6 - -4}{4 - 2} = \frac{10}{2} = 5$

distance $= \sqrt{\Delta x^2 + \Delta y^2}$

$\sqrt{2^2 + 10^2}$

$\sqrt{104} = 10.2$

midpoint $= \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$

$\left(\frac{2+4}{2}, \frac{-4+6}{2}\right)$

$(3, 1)$

(10) Put in standard form

$$y = \frac{2}{3}x - 4$$

$$-\frac{2}{3}x \quad -\frac{2}{3}x$$

$$-3\left[-\frac{2}{3}x + y = -4\right]$$

$$-\frac{3}{1} \cdot \frac{-2}{3} = \frac{6}{3}$$

$$2x - 3y = 12$$

(11) Put in standard form:

$$\frac{3x + 9y = 15}{3}$$

$$x + 3y = 5$$