11-7-19 4th Trig

① What is the slope from $(2, n)$ to $(4, n+10)$?

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

② Which equations are in standard form?

(A) $2x - 3y = -8$ Yes

(B) $x + y = \frac{2}{5}$ NO

(C) $-2x + 3y = 10$ NO

(D) $\frac{1}{3}x + y = 6$ NO

(E) $x - y = -7$ Yes

③ Give the equation of the line that goes through $(-2, -4)(-4, -10)$.

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

$$y + 4 = 3(x + 2)$$

$$y + 4 = 3x + 6$$

$$-4 \qquad -4$$

$$y = 3x + 2$$

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

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

$$= 3$$

④ Give the equation of the line that is $\perp$ to $y = 4x - 5$ and goes through $(-8, 12)$.

$y = 4x - 5$

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

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

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

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

$+12 \qquad +12$

$y = -\frac{1}{4}x + 10$

$-\frac{1}{4} \cdot \frac{8}{1} = \frac{-8}{4}$

⑤ $\frac{205!}{206!} = \frac{205 \cdot 204 \cdots 2 \cdot 1}{206 \cdot 205 \cdot 204 \cdots 2 \cdot 1}$

$\frac{1}{206}$

⑥ $\frac{10!\ 6!\ 4!}{11!\ 5!\ 7!}$

$\frac{10 \cdot 9 \cdot 8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}{11 \cdot 10 \cdot 9 \cdot 8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1} \cdot \frac{6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}{5 \cdot 4 \cdot 3 \cdot 2 \cdot 1} \cdot \frac{4 \cdot 3 \cdot 2 \cdot 1}{7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}$

$\frac{1}{385}$

⑦ $\sum_{n=2}^{4} 2^n - 3n$

$n=2 \quad 2^2 - 3(2) = -2$

$n=3 \quad 2^3 - 3(3) = -1$

$n=4 \quad 2^4 - 3(4) = 4$

$\frac{}{1}$

⑧ Give the equation of the line that is $\perp$ to $y = \frac{1}{2}x - 6$ and goes through $(10, -14)$. Put answer in standard form.

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

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

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

$y + 14 = -2(x - 10)$

$y + 14 = -2x + 20$

$-14 \qquad -14$

$y = -2x + 6$

$+2x \quad +2x$

$2x + y = 6$

⑨ Rewrite in standard form.

$y + \frac{2}{3}x = -\frac{4}{9}$

$9\left[\frac{2}{3}x + y = -\frac{4}{9}\right]$

$6x + 9y = -4$

$\frac{9}{1} \cdot \frac{2}{3} = \frac{18}{3}$

$\frac{9}{1} \cdot \frac{-4}{9} = \frac{-36}{9}$

(10) $(-2,4)(1,-2)$

$$\text{slope} = \frac{\Delta y}{\Delta x} = \frac{4 - -2}{-2 - 1} = \frac{6}{-3} = -2$$

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

$$\sqrt{3^2 + 6^2}$$

$$\sqrt{9+36} \approx 6.7$$

$$\text{midpoint} = \left(\frac{-2+1}{2}, \frac{4+-2}{2}\right)$$

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