

12-2-13  
3<sup>rd</sup> Trig

- ① What is slope from (1, 5) to (3, 15)?

$$\text{Slope} = \frac{\Delta y}{\Delta x} = \frac{15-5}{3-1} = \frac{10}{2} = 5$$

- ② What is the distance from (1, 4) to (3, 9)?

$$\begin{aligned} D &= \sqrt{\Delta x^2 + \Delta y^2} \\ &= \sqrt{2^2 + 5^2} \\ &= \sqrt{4+25} \\ &= \sqrt{29} \end{aligned}$$

- ③ What is the midpoint between (1, 4) and (3, 10)?

$$\begin{aligned} \text{midpoint} &= \left( \frac{x_1+x_2}{2}, \frac{y_1+y_2}{2} \right) \\ &= \left( \frac{1+3}{2}, \frac{4+10}{2} \right) \\ &= (2, 7) \end{aligned}$$

- ④ Which equation is not in standard form?

a.)  $2x - 3y = -10$

b.)  $5x + y = 0$

c.)  $2x - 5y = 2$

d.)  $5x - y = \frac{1}{2}$  (can't have fractions)

- ⑤ Which is not in slope intercept form?

a.)  $y = \frac{1}{2}x - 3$

b.)  $y = -3x + 5$

c.)  $-y = x + 4$

d.)  $y = -x - 1$

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

- ⑥ Give equation in SIF that goes through  $(-8, 2)$  and has a slope of  $\frac{1}{2}$ .

$$\begin{aligned} y - y_1 &= m(x - x_1) \\ y - 2 &= \frac{1}{2}(x - (-8)) \\ y - 2 &= \frac{1}{2}x + 4 \\ \frac{+2}{+2} & \quad \frac{+2}{+2} \\ \hline y &= \frac{1}{2}x + 6 \end{aligned}$$

- ⑦ What is the equation in standard form that is parallel to  $y = 8x - 5$  and passes through  $(1, 20)$ .

$$\begin{aligned} y - y_1 &= m(x - x_1) \\ y - 20 &= 8(x - 1) \\ y - 20 &= 8x - 8 \\ \frac{+20}{+20} & \quad \frac{+20}{+20} \\ \hline y &= 8x + 12 \\ \underline{-8x \quad -8x} & \\ -1[-8x + y = 12] & \\ 8x - y &= -12 \end{aligned}$$

- ⑧ Give the equation in standard form that is  $\perp$  to  $2x - 10y = 10$  and passes through the point  $(2, 2)$ .

$$\begin{aligned} 2x - 10y &= 10 \quad \text{slope?} \\ \frac{-2x}{-2x} & \quad \frac{-10}{-2x} \\ \hline -10y &= \frac{-2x}{-2} + \frac{10}{-2} \\ \frac{-10y}{-10} &= \frac{-2x}{-10} + \frac{10}{-10} \\ y &= \frac{1}{5}x - 1 \\ m &= \frac{1}{5} \therefore \perp m = -5 \end{aligned}$$

$$\begin{aligned} y - y_1 &= m(x - x_1) \\ y - 2 &= -5(x - 2) \\ y - 2 &= -5x + 10 \\ \frac{+2}{+2} & \quad \frac{+2}{+2} \\ \hline y &= -5x + 12 \\ \underline{+5x \quad +5x} & \\ 5x + y &= 12 \end{aligned}$$

$$\textcircled{9} \sum_{n=2}^4 n^2$$

$$n=2 \quad 2^2 = 4$$

$$n=3 \quad 3^2 = 9$$

$$n=4 \quad 4^2 = 16$$

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$$\boxed{29}$$

$$\textcircled{10} \frac{96!}{94! 2!} = \frac{\cancel{96 \cdot 95 \cdot 94 \cdot 93 \dots 2 \cdot 1}}{\cancel{94 \cdot 93 \dots 2 \cdot 1} \cdot 2 \cdot 1}$$

$$\frac{96 \cdot 95}{2} = 4560$$

$$\textcircled{11} \frac{124!}{125!} = \frac{\cancel{124 \cdot 123 \dots 2 \cdot 1}}{\cancel{125 \cdot 124 \cdot 123 \dots 2 \cdot 1}}$$

$$\frac{1}{125}$$

12-2-13  
4<sup>th</sup> Trig

- ① What is the slope from (3,4) to (1,10)?

$$\text{slope} = \frac{\Delta y}{\Delta x} = \frac{10-4}{1-3} = \frac{6}{-2} = -3$$

- ② What is the distance from (1,-2) to (3,2)?

$$\begin{aligned} D &= \sqrt{\Delta x^2 + \Delta y^2} \\ &= \sqrt{2^2 + 4^2} \\ &= \sqrt{4+16} \\ \sqrt{20} &\approx 4.5 \end{aligned}$$

- ③ What is the midpoint between (-2,6) and (-4,10)?

$$\begin{aligned} \text{Midpoint} &= \left( \frac{x_1+x_2}{2}, \frac{y_1+y_2}{2} \right) \\ &= \left( \frac{-2+(-4)}{2}, \frac{6+10}{2} \right) \\ &= (-3, 8) \end{aligned}$$

- ④ Which is not in slope intercept form?

- (A)  $y = \frac{1}{2}x + 3$  ✓  
(B)  $y = -2x - 8$   
(C)  $\boxed{-}y = 2x + 5$  X  
(D)  $y = 8x + 0$

- ⑤ Which is not in standard form?

- (A)  $x - y = -1$   
(B)  $2x + 3y = 4$   
(C)  $x - 4y = \frac{1}{2}$  can't have a fraction  
(D)  $2x + 2y = 0$  ✓

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

- ⑥ What is the equation in SIF that is parallel to  $y = 8x - 5$  and passes through  $(1, 20)$ ?

$$\begin{aligned} y - y_1 &= m(x - x_1) \\ y - 20 &= 8(x - 1) \\ y - 20 &= 8x - 8 \\ \hline y &= 8x + 12 \end{aligned}$$

- ⑦ Give the equation of the line in standard form that is  $\perp$  to  $2x - 10y = 10$  and passes through  $(2, 2)$ .

$$\begin{aligned} 2x - 10y &= 10 \\ \hline -10y &= -2x + 10 \\ \hline y &= \frac{1}{5}x - 1 \\ \therefore \perp m &= -5 \end{aligned}$$

$$\begin{aligned} y - y_1 &= m(x - x_1) \\ y - 2 &= -5(x - 2) \\ y - 2 &= -5x + 10 \\ \hline y &= -5x + 12 \\ \hline 5x + y &= 12 \end{aligned}$$

$$\textcircled{8} \sum_{n=1}^3 n^2 = 14$$

$$\begin{aligned} n=1 & 1^2 = 1 \\ n=2 & 2^2 = 4 \\ n=3 & 3^2 = 9 \\ \hline & 14 \end{aligned}$$

$$\textcircled{9} \frac{2! 12!}{2! 1! 3!} = \frac{2! 2! 2! 2! \dots 2! 1}{2! 1! 10 \dots 2! 3}$$

$$\frac{2! 2}{6} = 35\frac{1}{3}$$

$$\textcircled{10} \frac{100!}{10!} = \frac{100 \cdot 99 \cdot 98 \dots 2 \cdot 1}{10!}$$

$$\textcircled{11} \frac{10! 8!}{9! 6! 2!} = \frac{10 \cdot 9! \cdot 8 \cdot 7 \cdot 6!}{9! 6! 2!}$$

⑫ How many ways can I answer a True-False quiz if there are 4 questions?

$$\frac{2}{1} \cdot \frac{2}{2} \cdot \frac{2}{3} \cdot \frac{2}{4} = 16$$