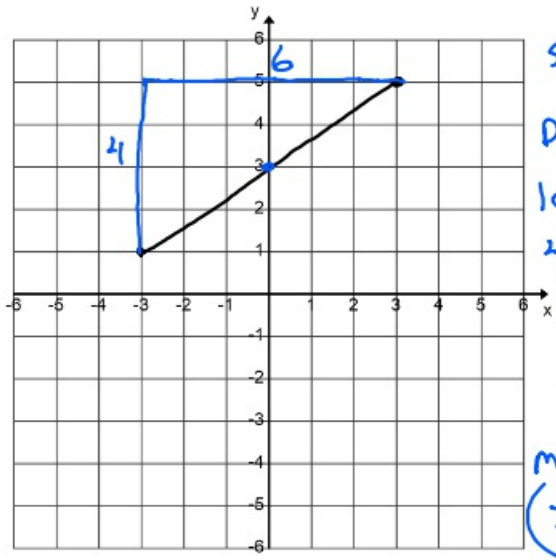
11-4-19 1st Trig



Slope $= \frac{4}{6} = \frac{2}{3}$

Distance =

$leg^2 + leg^2 = hyp^2$

$4^2 + 6^2 = hyp^2$

$\sqrt{52} = \sqrt{hyp^2}$

$hyp \approx 7.2$

Midpoint =

$\left(\frac{-3+3}{2}, \frac{1+5}{2}\right)$

$(0, 3)$

② $(4, 10)(6, 2)$

Slope $= \frac{rise}{run} = \frac{\Delta y}{\Delta x} = \frac{10-2}{4-6} = \frac{8}{-2} = -4$

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

$\sqrt{2^2 + 8^2} = \sqrt{68} \approx 8.2$

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

$= \left(\frac{4+6}{2}, \frac{10+2}{2}\right) = (5, 6)$

FIRE

Rise with the wise (y)

AND

Run to the exit (x)

③ Give the equation in SIF that goes through $(2, 10)$ (x_1, y_1) and has a slope of -4.

$$y - y_1 = m(x - x_1)$$
$$y - 10 = -4(x - 2)$$
$$y - 10 = -4x + 8$$
$$+10 \qquad +10$$
$$y = -4x + 18$$

④ Give the equation in SIF that goes through $(-4, -10)$ and is $\perp$ to $y = \frac{1}{2}x + 5$.

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

$$y - y_1 = m(x - x_1)$$
$$y + 10 = -2(x + 4)$$
$$y + 10 = -2x - 8$$
$$-10 \qquad -10$$
$$y = -2x - 18$$

⑤ Rewrite $y = \frac{2}{3}x + 10$ in Standard form.

$$y = \frac{2}{3}x + 10$$
$$-\frac{2}{3}x \quad -\frac{2}{3}x$$
$$-3\left[-\frac{2}{3}x + y = 10\right]$$
$$2x - 3y = -30$$

⑥ Rewrite $y = \frac{1}{2}x + \frac{2}{3}$ in standard form.

$$y = \frac{1}{2}x + \frac{2}{3}$$
$$-\frac{1}{2}x \quad -\frac{1}{2}x$$
$$-6\left[-\frac{1}{2}x + y = \frac{2}{3}\right]$$
$$3x - 6y = -4$$

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

$-\frac{6}{1} \cdot \frac{2}{3} = \frac{-12}{3}$

(7) $\sum_{n=3}^{5} -2n$

$n=3 \quad -2(3) = -6$

$n=4 \quad -2(4) = -8$

$n=5 \quad -2(5) = -10$

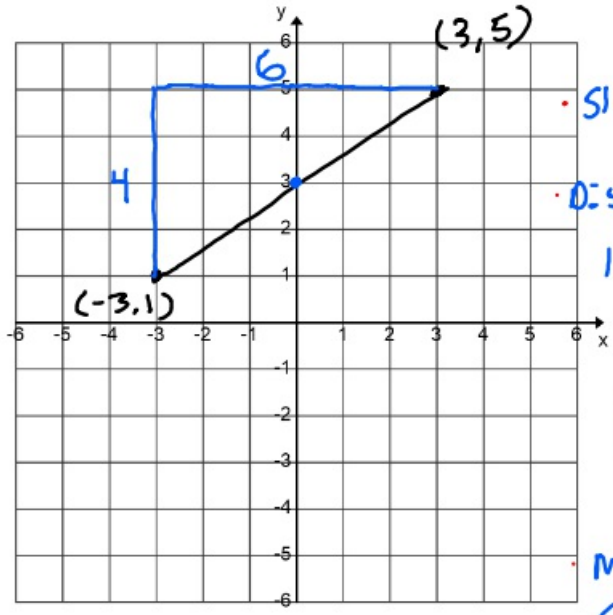
-24

(8) $\frac{98!}{96!} = \frac{98 \cdot 97 \cdot 96 \cdots 2 \cdot 1}{96 \cdot 95 \cdots 2 \cdot 1}$

$\frac{98 \cdot 97}{1} = 9506$

(9) $\frac{10!\ \ 8!}{9!\ \ 9!} = \frac{10 \cdot 9 \cdots 2 \cdot 1 \quad 8 \cdot 7 \cdots 2 \cdot 1}{9 \cdot 8 \cdots 2 \cdot 1 \quad 9 \cdot 8 \cdots 2 \cdot 1}$

$\frac{10}{9}$



Slope $= \frac{4}{6} = \frac{2}{3}$

Distance

$leg^2 + leg^2 = hyp^2$

$4^2 + 6^2 = hyp^2$

$\sqrt{52} = \sqrt{hyp^2}$

$7.2 \approx hyp$

Midpoint

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

$\left(\frac{-3+3}{2}, \frac{1+5}{2}\right)$

$(0,3)$

② $(4,5)(6,15)$

Slope $\frac{\text{Rise with the wise(y)}}{\text{Run to the exit(x)}}$ FIRE and

Slope $= \frac{\Delta y}{\Delta x} = \frac{15-5}{6-4} = \frac{10}{2} = 5$

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

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

$\sqrt{104}$

≈ 10.2

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

$\left(\frac{4+6}{2}, \frac{5+15}{2}\right)$

$(5, 10)$

③ Give the equation in SIF that goes through $(2, 10)$ (x_1, y_1) and has a slope of -3.

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

$$y - 10 = -3(x - 2)$$

$$y - 10 = -3x + 6$$

$$+10 \qquad +10$$

$$y = -3x + 16$$

④ Give the equation in SIF that goes through $(-4, -6)$ and is $\perp$ to $y = -\frac{1}{2}x + 3$.

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

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

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

$$y + 6 = 2x + 8$$

$$-6 \qquad -6$$

$$y = 2x + 2$$

⑤ Rewrite in standard form.

$$y = \frac{2}{5}x + 4$$

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

$$-5\left[-\frac{2}{5}x + y = 4\right] \qquad -\frac{5}{1} \cdot -\frac{2}{5} = \frac{10}{5}$$

$$2x - 5y = -20$$

⑥ Rewrite in Standard form

$$y = \frac{2}{3}x + \frac{1}{2}$$

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

$$-6\left[-\frac{2}{3}x + y = \frac{1}{2}\right]$$

$$4x - 6y = -3$$

$\frac{-6}{1} \cdot \frac{-2}{3} = \frac{12}{3}$

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

⑦ $\sum_{n=4}^{6} -3n$

$n=4 \quad -3(4) = -12$

$n=5 \quad -3(5) = -15$

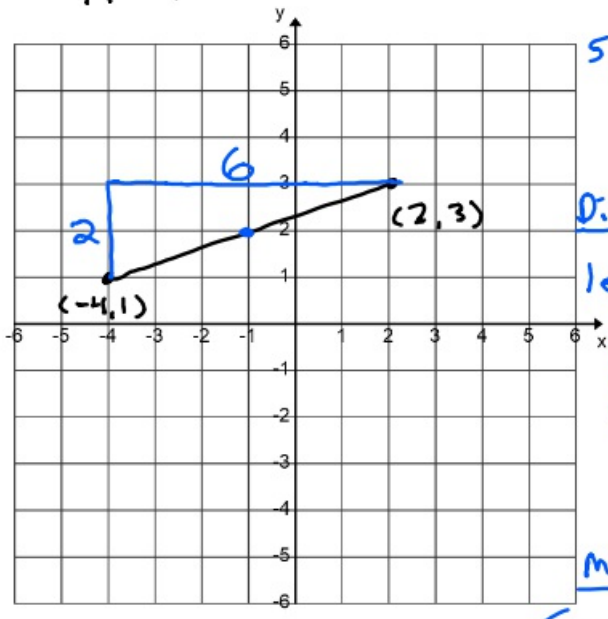
$n=6 \quad -3(6) = -18$

-45

⑧ $\frac{98!}{97!} = \frac{98 \cdot 97 \cdot 96 \cdots 2 \cdot 1}{97 \cdot 96 \cdots 2 \cdot 1}$

$= 98$

11-4-19 4th Trig



$\text{slope} = \frac{\text{rise}}{\text{run}} = \frac{2}{6} = \frac{1}{3}$

Distance

$leg^2 + leg^2 = hyp^2$

$6^2 + 2^2 = hyp^2$

$\sqrt{40} = \sqrt{hyp^2}$

$hyp \approx 6.3$

Midpoint

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

$\left(\frac{-4+2}{2}, \frac{1+3}{2}\right)$

$(-1, 2)$

② $(4,6)(2,10)$

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

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

$\sqrt{2^2+4^2}$

$\sqrt{20}$

≈ 4.5

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

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

$(3, 8)$

(3) Give the equation in SIF that goes through $(2, 10)$ (x_1, y_1) and has a slope of -3.

$$y - y_1 = m(x - x_1)$$
$$y - 10 = -3(x - 2)$$
$$y - 10 = -3x + 6$$
$$+10 \qquad +10$$
$$y = -3x + 16$$

(4) Give the equation in SIF that goes through $(-2, -6)$ and is $\perp$ to $y = 2x + 5$.

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

$$y - y_1 = m(x - x_1)$$
$$y + 6 = -\frac{1}{2}(x + 2)$$
$$y + 6 = -\frac{1}{2}x - 1$$
$$-6 \qquad -6$$
$$y = -\frac{1}{2}x - 7$$

(5) Rewrite $y = \frac{2}{5}x + 4$ in standard form.

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

$-\frac{5}{1} \cdot \frac{-2}{5} = \frac{10}{5}$

$$2x - 5y = -20$$

(6) Rewrite in standard form

$$y = \frac{1}{3}x + \frac{1}{2}$$

$$-\frac{1}{3}x \quad -\frac{1}{3}x$$

$$-6\left[-\frac{1}{3}x + y = \frac{1}{2}\right]$$

$$2x - 6y = -3$$

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

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

(7) $\sum_{n=4}^{6} -5n - 1$

$n = 4 \quad -5(4) - 1 = -21$

$n = 5 \quad -5(5) - 1 = -26$

$n = 6 \quad -5(6) - 1 = -31$

-78

(8) $\frac{98!}{96!} = \frac{98 \cdot 97 \cdot 96 \cdot 95 \cdots 2 \cdot 1}{96 \cdot 95 \cdots 2 \cdot 1}$

$98 \cdot 97$

9506