1. Two groups of teenagers and adults went to a basketball game last week. The first group paid $88 for 4 teens and 2 adults. The second group paid $164 for 7 teens and 4 adults. What was the cost for a teen's ticket and for an adult ticket?

x = teen ticket y = adult ticket

$-2(4x+2y=88)$

$7x+4y=164$

$-8x-4y=-176$

$+\ 7x+4y=164$

$-x=-12$

$-1 \quad -1$

$x = \$12$

$4(12)+2y=88$

$48+2y=88$

$-48 \quad -48$

$2y=40$

$y=\$20$

2. Write each equation in slope-intercept form:

$-9x+4y=-24$

$+9x \quad +9x$

$4y=9x-24$

$\frac{4y}{4}=\frac{9x}{4}-\frac{24}{4}$

$y=\frac{9}{4}x-6$

$10x-2y=14$

$-10x \quad -10x$

$-2y=-10x+14$

$\frac{-2y}{-2}=\frac{-10x}{-2}+\frac{14}{-2}$

$y=5x-7$

3. What is the equation of the line that passes through the points (-3, 6) and (4, 27)?

$m=\frac{27-6}{4+3}=\frac{21}{7}=3$

$y=mx+b$

$27=3(4)+b$

$27=12+b$

$-12 \quad -12$

$b=15$

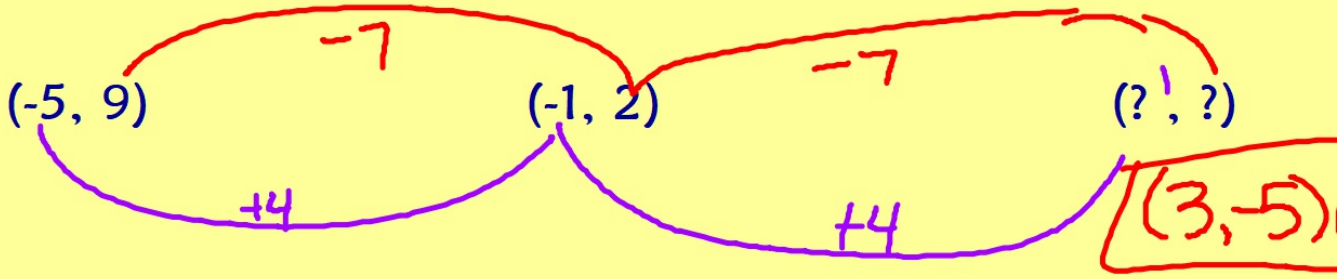
$y=3x+15$

Midpoint and Distance Formula Application

Missing Endpoint

*Use when given 1 endpoint and the midpoint to find the other endpoint

"Swoop Swoop Method"



1. Swoop from -5 to -1

2. Swoop the same distance from -1 to the unknown x-value

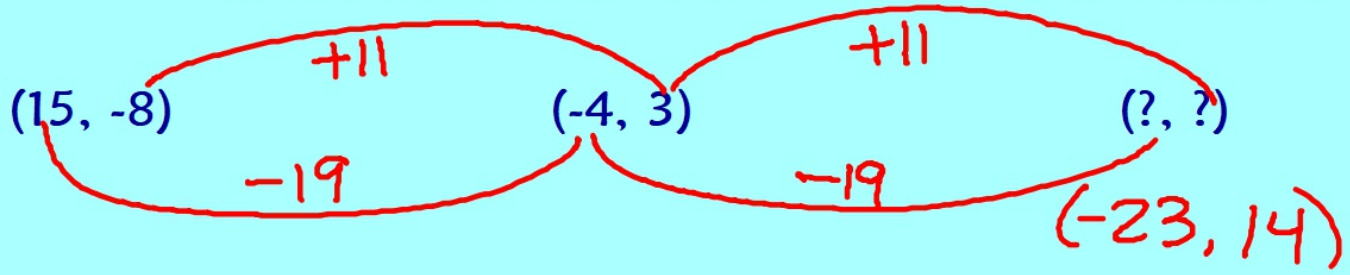
-1 + 4 = 3 (Endpoint has x-value of 3)

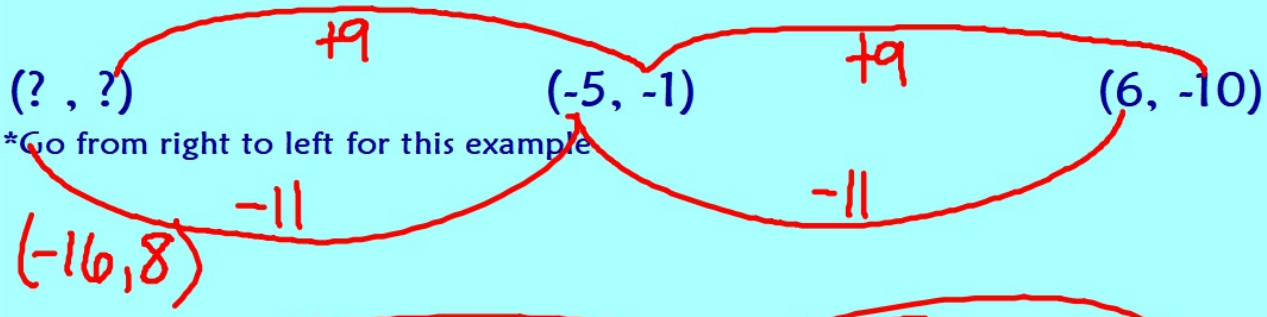
3. Swoop from 9 to 2

4. Swoop the same distance from 2 to the unknown y-value

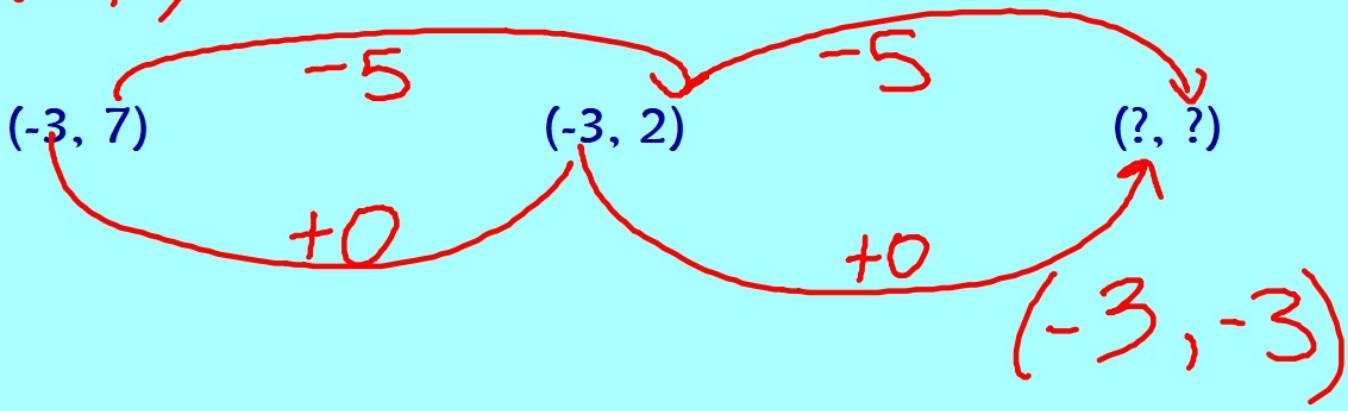
2 - 7 = -5 (Endpoint has y-value of -5)

More Examples (Use the Swoop Swoop Method)





*Go from right to left for this example



$(-4,7)\ (3,12)$ $\left(\frac{-4+3}{2}, \frac{7+12}{2}\right)$

$d = \sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$ $\left(-\frac{1}{2}, \frac{19}{2}\right)$

$d = \sqrt{(3+4)^2+(12-7)^2}$ $(-0.5, 9.5)$

$\sqrt{(7)^2+(5)^2}$

$\sqrt{49+25} = \boxed{\sqrt{74}} = \boxed{8.6}$

$(6,7)\quad(-3,9)$

$d=\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

$\sqrt{(-3-6)^2+(9-7)^2}$

$\sqrt{(-9)^2+(2)^2}$

$\sqrt{81+4}=\boxed{\sqrt{85}}=9.23$

$\left(\frac{6+-3}{2},\frac{7+9}{2}\right)$

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