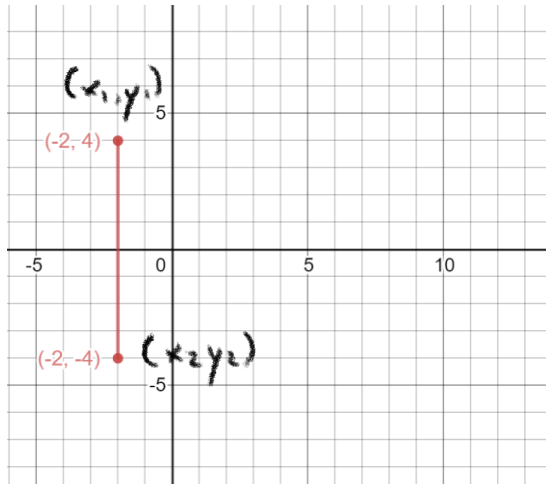


Section 2.4 – Practice Problems

1. Use the slope formula to determine the slope of the following lines.

a)

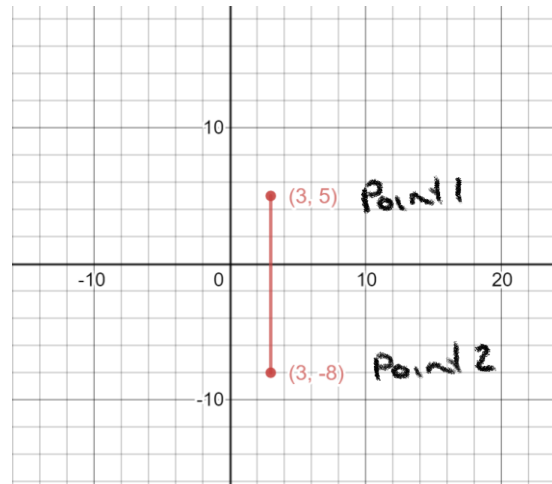


Work Space

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{-4 - 4}{-2 - (-2)} = \frac{-8}{0}$$

Undefined

b)

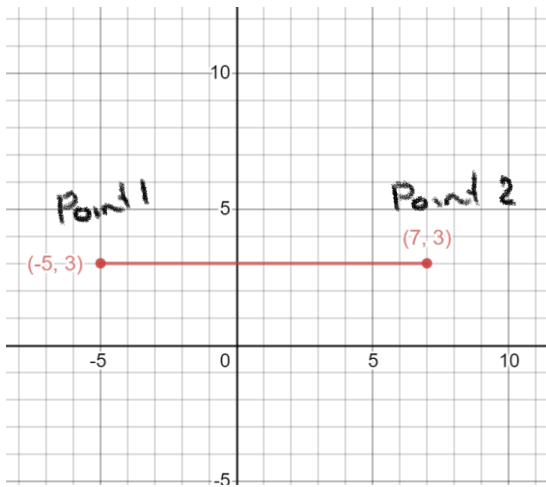


Work Space

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{-8 - 5}{3 - 3} = \frac{-13}{0}$$

undefined

c)

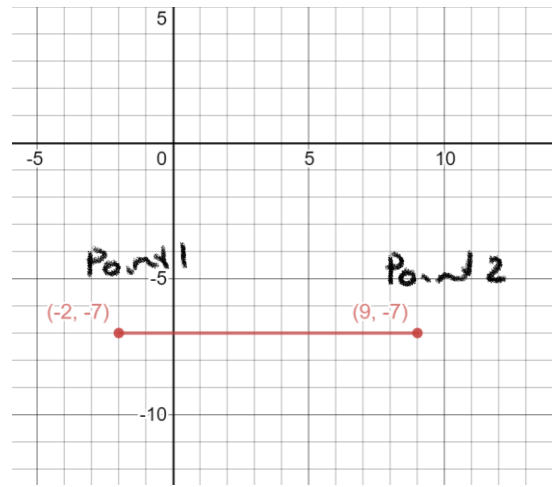


Work Space

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{3 - 3}{7 - (-5)} = \frac{0}{12}$$

0

d)



Work Space

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{-7 - (-7)}{9 - (-2)} = \frac{0}{11}$$

0

It doesn't matter which point is 1 or 2 just be consistent

2. Is the line joining the following two points vertical, horizontal, or neither. Prove your statement using the Slope Formula.

$$\frac{y_2 - y_1}{x_2 - x_1}$$

a) (34.5, 2.6) and (45.0, 2.6)

$$\frac{2.6 - 2.6}{45 - 34.5} = \frac{0}{10.5} = 0$$

Horizontal

b) (68, 10) and (52, 12)

$$\frac{12 - 10}{52 - 68} = \frac{2}{-16} = -\frac{1}{8}$$

neither

c) (40, 100) and (40, 200)

$$\frac{200 - 100}{40 - 40} = \frac{100}{0}$$

Undefined

Vertical

d) (31, 5) and (62, 12)

$$\frac{12 - 5}{62 - 31} = \frac{7}{31}$$

Neither

e) (4, 2) and (2, 4)

$$\frac{4 - 2}{2 - 4} = \frac{2}{-2} = -1$$

Neither

f) (0, 5) and (0, -2)

$$\frac{-2 - 5}{0 - 0} = \frac{-7}{0} \text{ undefined}$$

Vertical

3. Order the slopes in the previous question from flattest to steepest.

a, d, b, e, c ↔ f

↑ ↑

Horizontal vertical

4. Jake knows that the average slope of his Green Chair ski run is: $\frac{9}{20}$. The coordinates of the top and bottom of the ski run are: (2m, 0m) and (1250m, y). What is the missing coordinate?

pt. 1 pt. 2

$$\text{Slope} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{y - 0}{1250 - 2} = \frac{y}{1248}$$

but slope = $\frac{9}{20}$

$$\text{So } \frac{1248 \cdot 9}{20} = \frac{y}{1248}$$

$$y = \frac{1248 \cdot 9}{20}$$

y = 561.6m

5. A line connecting the points $(x, 5)$ and $(4, 8)$ has a slope of 0.3. What is the missing coordinate? And once you have found it, graph the points and the line on the grid provided. Check your line to ensure you are correct.

Slope = $0.3 = \frac{3}{10}$

So...

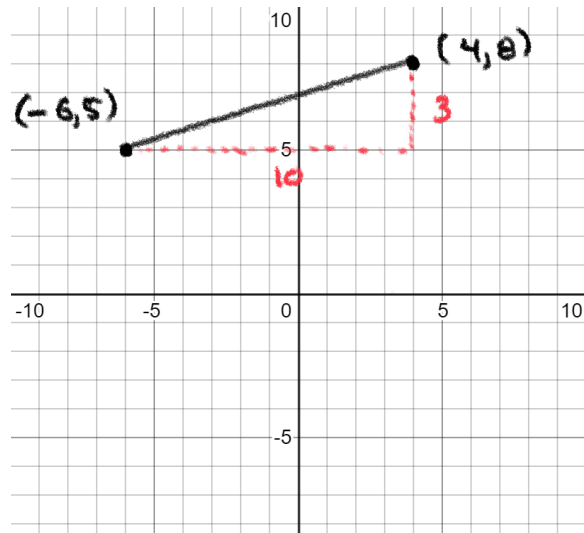
$$\frac{3}{10} = \frac{8-5}{4-x}$$

Since $3 = 3$

$$10 = 4 - x$$

$$\frac{3}{10} = \frac{3}{4-x}$$

$x = -6$



6. Phil is a mountain biker, he has built a ramp in his backyard. He wants the slope of his ramp to be: $\frac{4}{11}$. He needs the height of the ramp to be 8m. How long should the base of the ramp be? Use the Pythagorean Theorem $a^2 + b^2 = c^2$ to find the length of the ramp itself.

$$\frac{2 \cdot 4}{2 \cdot 11} = \frac{8}{x}$$

↓

$$\frac{8}{22} = \frac{8}{22}$$

make tops
the same
then bottoms
are

$$y^2 = 8^2 + 22^2$$

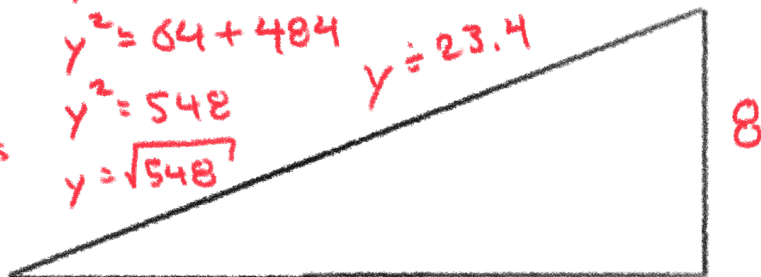
$$y^2 = 64 + 484$$

$$y^2 = 548$$

$$y = \sqrt{548}$$

$$y \approx 23.4$$

$$x = 22$$



7. Ashley works for a Powerline company. The contractor needs a power-line set-up from the bottom of a hill to the top. What is the slope of the Powerline connection.

$$\frac{2442 - 2423}{162 - 5} = \frac{19}{157}$$

