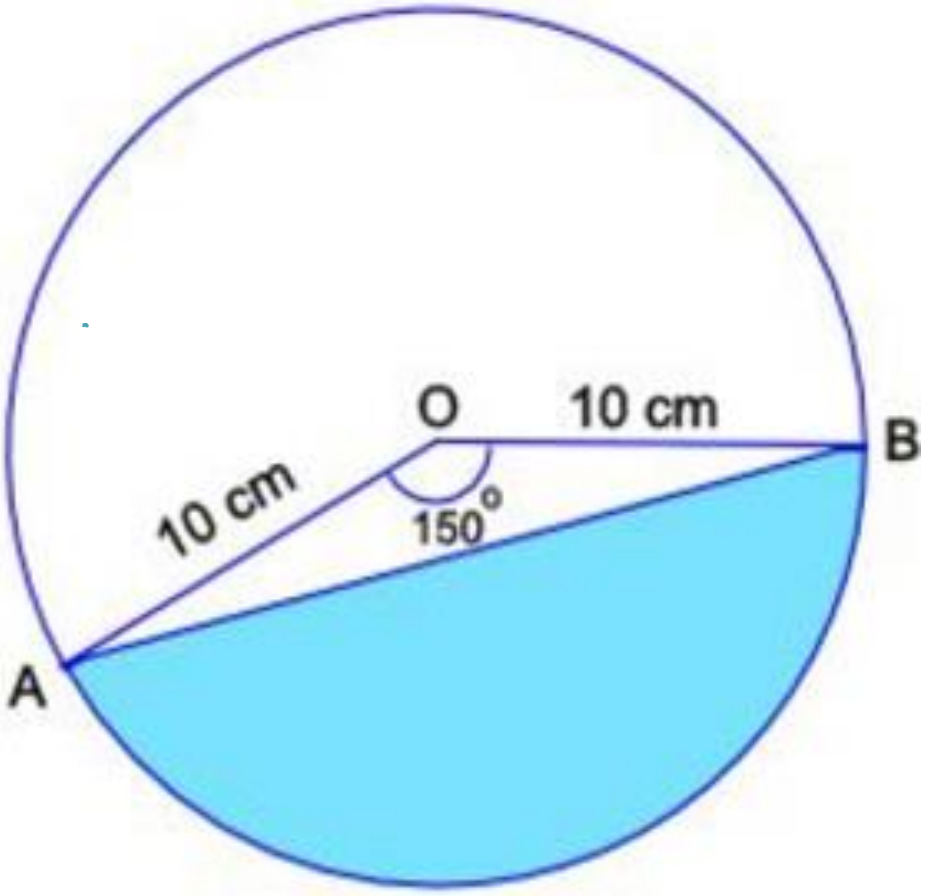
The diagram shows a circle with center O and radius 10 cm. A and B are points on the circumference such that $\widehat{AB}$ makes an angle of 150° at O.
Calculate the area of the shaded region.

A. 7,475 cm^2 B. 131 cm^2

C. 150 cm^2 D. 106 cm^2

$$SA = \frac{\pi r^2 \theta}{360}$$



I. How to Write an Equation of a Line Given m and b

1. Write down y = m x + b
2. Substitute slope for *m* and y - intercept for *b*.
3. Simplify the equation

Write the equation of the line given m and b.

Ex. 1 Slope is -5 and y-intercept is 2

$m = -5$

$b = 2$

$y = mx + b$

$y = -5x + 2$

Ex. 2 Slope is -1/2 and y-intercept is -2

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

$b = -2$

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

Write the equation of the line given m and b.

Ex. 3 Slope is 0 and y-intercept is 3

$y = mx + b$

$0x + 3$

$y = 3$

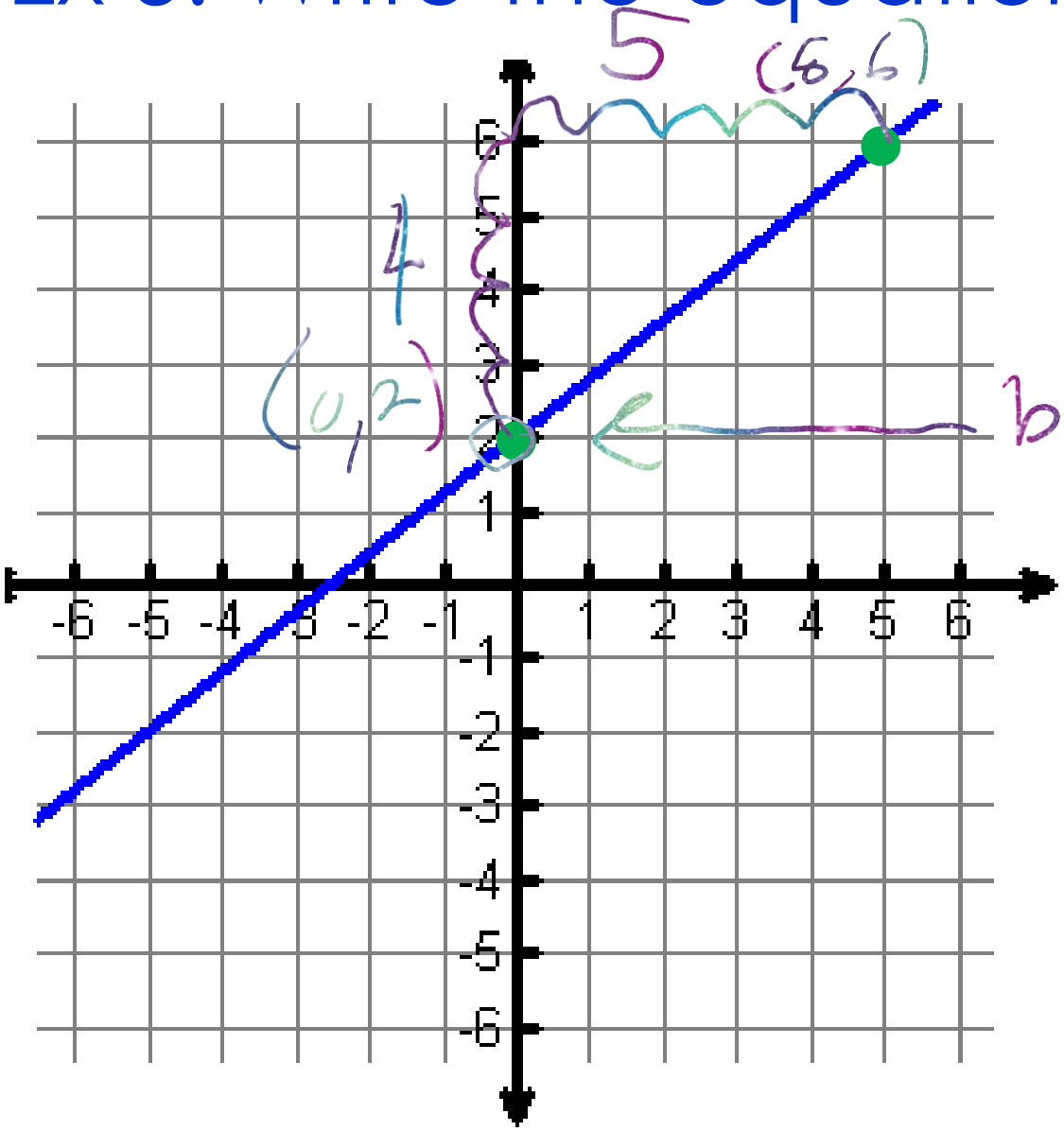
Ex. 4 Slope is 1/3 and y-intercept is 0

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

II. How to Write an Equation of a Line Given a Graph

1. Write down $y = mx + b$
2. Use any 2 "good" (pretty) points on the line to find the slope, *m*.
3. Find the y-intercept *on the graph, b*.
4. Substitute *slope* for m and *y-int* for b into the equation $y = mx + b$.

Ex 5. Write the equation of this graph



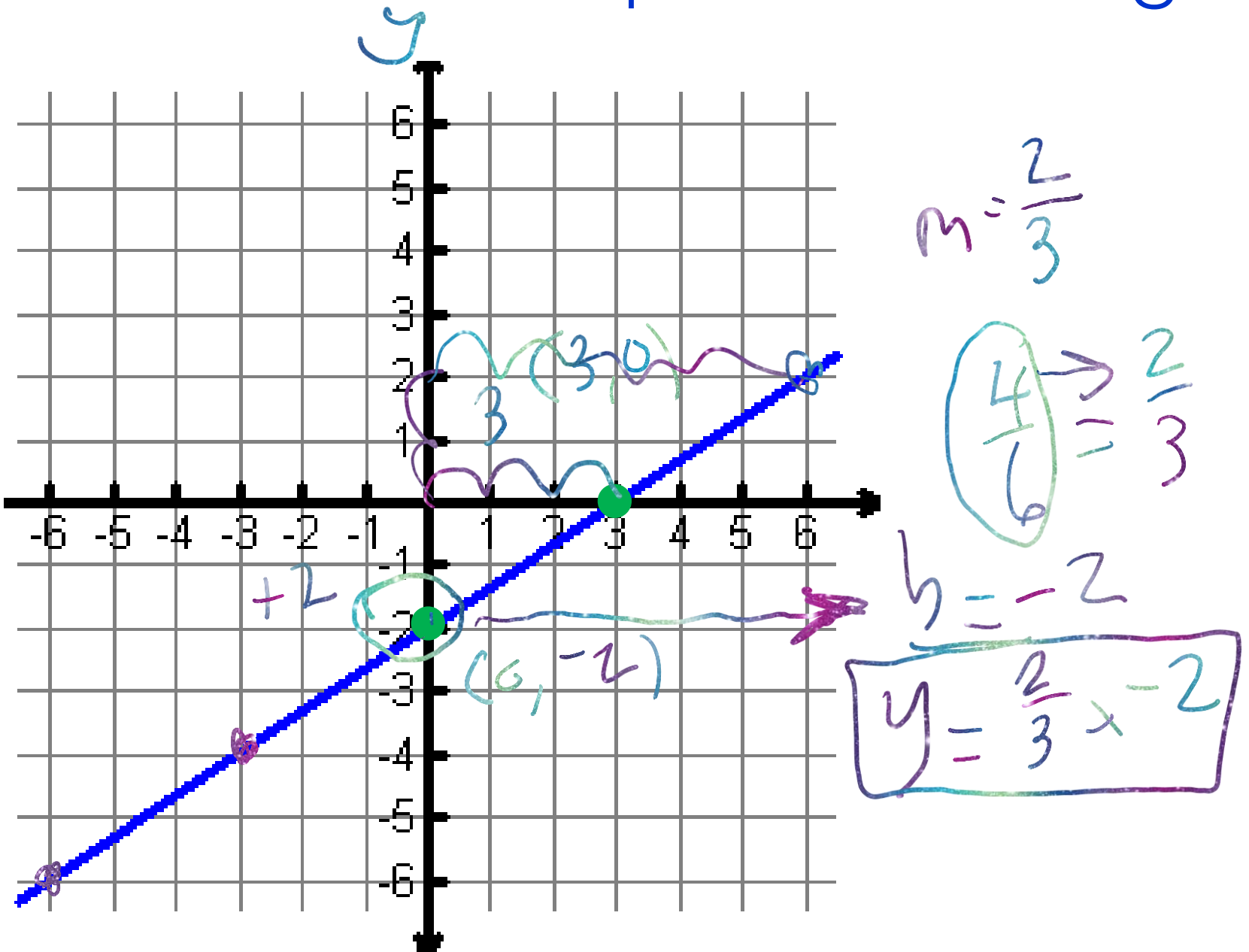
$m = \frac{\text{RISE}}{\text{RUN}} = \frac{4}{5}$

$b = 2$

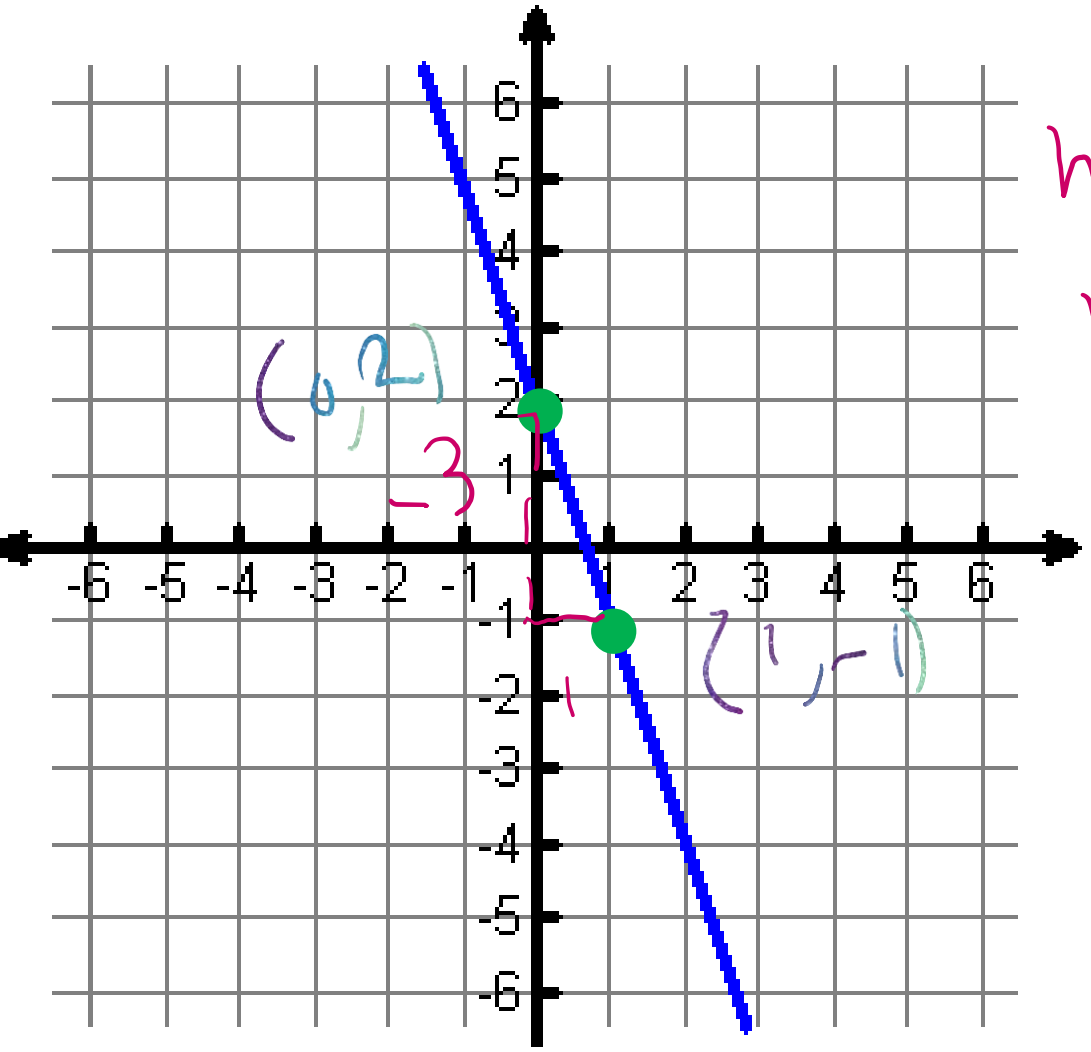
$y = mx + b$

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

Ex 6. Write the equation of this graph.



Ex 7. Write the equation of this graph.



$m = \frac{-3}{1} = -3$

$b = 2$

$y = -3x + 2$

III. How to Write an Equation of a Line Given *m* and a point

1. Write down y = mx + b.
2. Substitute slope for m and the point (x, y).
3. Solve for b.
4. Substitute m and b back into the equation.

y = mx + b

Write the equation of the line given *m* and a point

Ex 8: m = 2 Point: (2, 3)

$y = mx + b$

$y = 2x + b$

$3 = 2(2) + b$

$3 = 4 + b$

$-4 \quad -4$

$-1 = b$

$y = \_x + \_$

$y = 2x + -1$

$\boxed{y = 2x - 1}$

Write the equation of the line given *m* and a point

Ex 9: m = 1/2 Point: (4,-3)

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

$y - (-3) = \frac{1}{2}(x - 4)$

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

$-3 \quad -3$

Point Slope

$y = \frac{1}{2}x - 5$

$y = mx + b$

$-3 = \frac{1}{2}(4) + b$

$-3 = 2 + b$

$-2 \quad -2$

$-5 = b$

Write the equation of the line given *m* and a point

Ex 15: m = -2 Point: (-5, 3)

$y = mx + b$

$3 = -2(-5) + b$

$3 = 10 + b$

$-10 \quad -10$

$-7 = b$

$y = -x + -$

$y = -2x - 7$

IV. How to Write an Equation of a Line Given *TWO* points

1. Write down y = mx + b.
2. Use the Slope formula to find m.
3. Pick one of the ordered pairs & substitute slope for m and the point (x, y).
4. Solve for b.
5. *Substitute* m *and* b *into the equation.*

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

Equation of a Line - Given 2 points

Ex: 21 (2, 3) (4, 5)

$x_1\ y_1 \quad x_2\ y_2$

$\frac{y_2 - y_1}{x_2 - x_1} = \frac{5-3}{4-2} = \frac{2}{2}$

① $m = \frac{\Delta y}{\Delta x} = \frac{2}{2} = 1$

② Plug in (x, y) (2, 3)

$y = mx + b$

$3 = 1(2) + b$

$3 = 2 + b$

$-2 \quad -2$

$1 = b$

$y = 1x + 1$

Equation of a Line - Given 2 points

Ex: 22 (2, 3) (-4, 15)

① $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{15-3}{-4-2} = \frac{12}{-6} = -2$

② $y = mx + b$

$3 = -2(2) + b$

$3 = -4 + b$

$+4 \quad +4$

$7 = b$

$y = mx + b$

$y = -2x + 7$