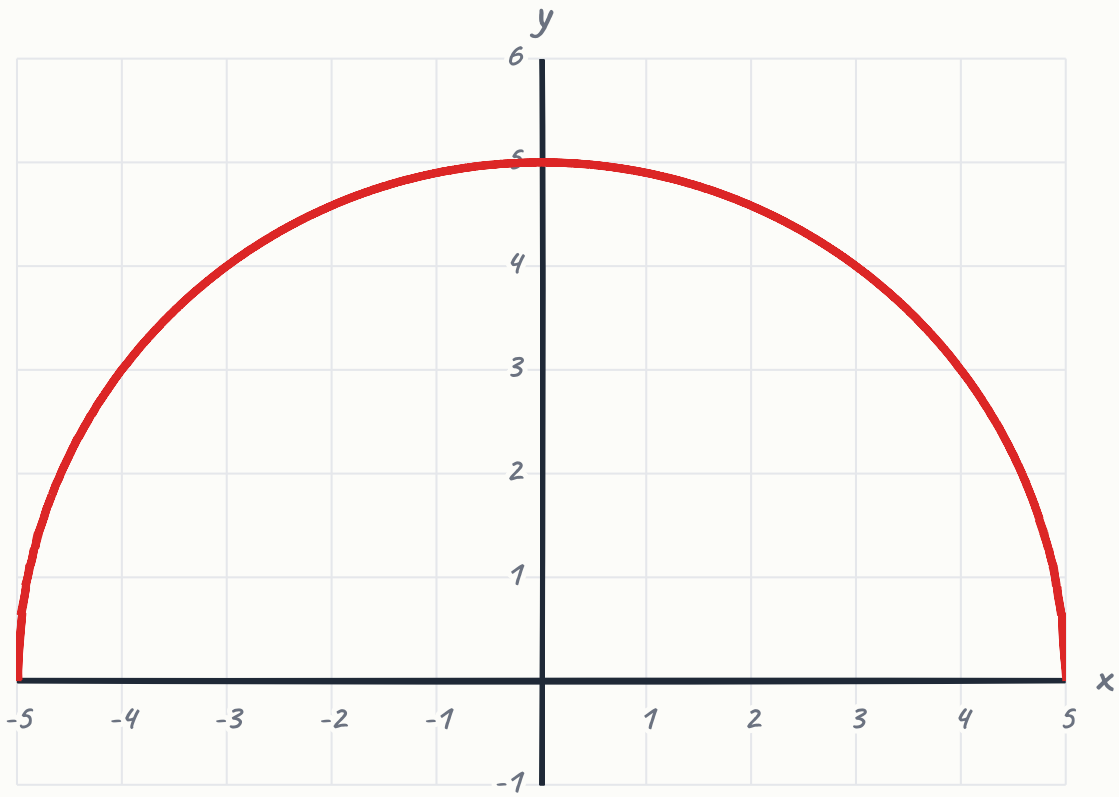
STUDY NOTES

Area of a circle

Class 9-10



Made with Whiteboard Tutor

10 Oct 2026

1 radius = r

Today we discover why a circle's area is pi r squared. Imagine slicing a circle into many thin pizza slices. Let me draw a circle and cut it into eight wedges.

2 Wedges → rectangle shape

If we rearrange these wedges, they almost form a rectangle. The width of this rectangle is half the circle's perimeter. The height of the rectangle is the radius r.

> $$\text{width} = \frac{1}{2} \times 2\pi r = \pi r$$
>
> $$\text{height} = r$$

3 Example: r = 3

So the area is width times height: pi r times r. That gives us area equals pi r squared. Let's try a real example: a circle with radius three.

> $$A = \pi r^2$$

4 9π ≈ 28.3 sq units

Area equals pi times three squared, which is nine pi. That's about twenty-eight point three square units. Quick check: if radius doubles, does area double or quadruple? Remember: area of a circle is always pi r squared.

> $$A = \pi \times 3^2 = 9\pi \approx 28.3$$

Quick quiz

1. If radius doubles from r to 2r, area changes by what factor?
   - a. 2 times
   - b. 4 times
   - c. π times

Answer key

Quick quiz

1. **(b) 4 times** — Area goes from πr^2 to $\pi(2r)^2 = 4\pi r^2$, so it quadruples.