

Trigonometry Worksheet: Range of Trigonometric Functions (1)

Find the range of each trigonometric function given below

1. $y = -4\cos(x)$

The range of $\cos(x)$ is known to be given by the interval $[-1, 1]$ so that

$$-1 \leq \cos(x) \leq 1$$

Multiply all terms of the inequality by -4

$$4 \geq -4\cos(x) \geq -4$$

the range is $[-4, 4]$.

2. $y = -2\sin(100x + \frac{\pi}{2})$

$$-1 \leq \sin(100x + \frac{\pi}{2}) \leq 1$$

Multiply all terms of the inequality by -2 .

$$2 \geq -2\sin(100x + \frac{\pi}{2}) \geq -2 \quad \text{range } [-2, 2]$$

3. $y = -100\cos(2x) - 200$

$$-1 \leq \cos(2x) \leq 1$$

Multiply all terms by -100 and add -200

$$100 \geq -100\cos(2x) \geq -100$$

$$100 - 200 \geq -100\cos(2x) - 200 \geq -100 - 200$$

$$\text{range } [-300, -100]$$