

4.2 - Translations of Sine and Cosine

Warmup

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Find the exact value.

1) $\csc 150^\circ$

2

2) $\csc 0^\circ$

undefined

3) $\tan 315^\circ$

-1

4) $\sec 315^\circ$

$\sqrt{2}$

5) $\csc \pi$

undefined

6) $\tan \frac{2\pi}{3}$

$-\sqrt{3}$

7) $\cot \frac{\pi}{2}$

0

8) $\sec \frac{5\pi}{6}$

$-\frac{2\sqrt{3}}{3}$



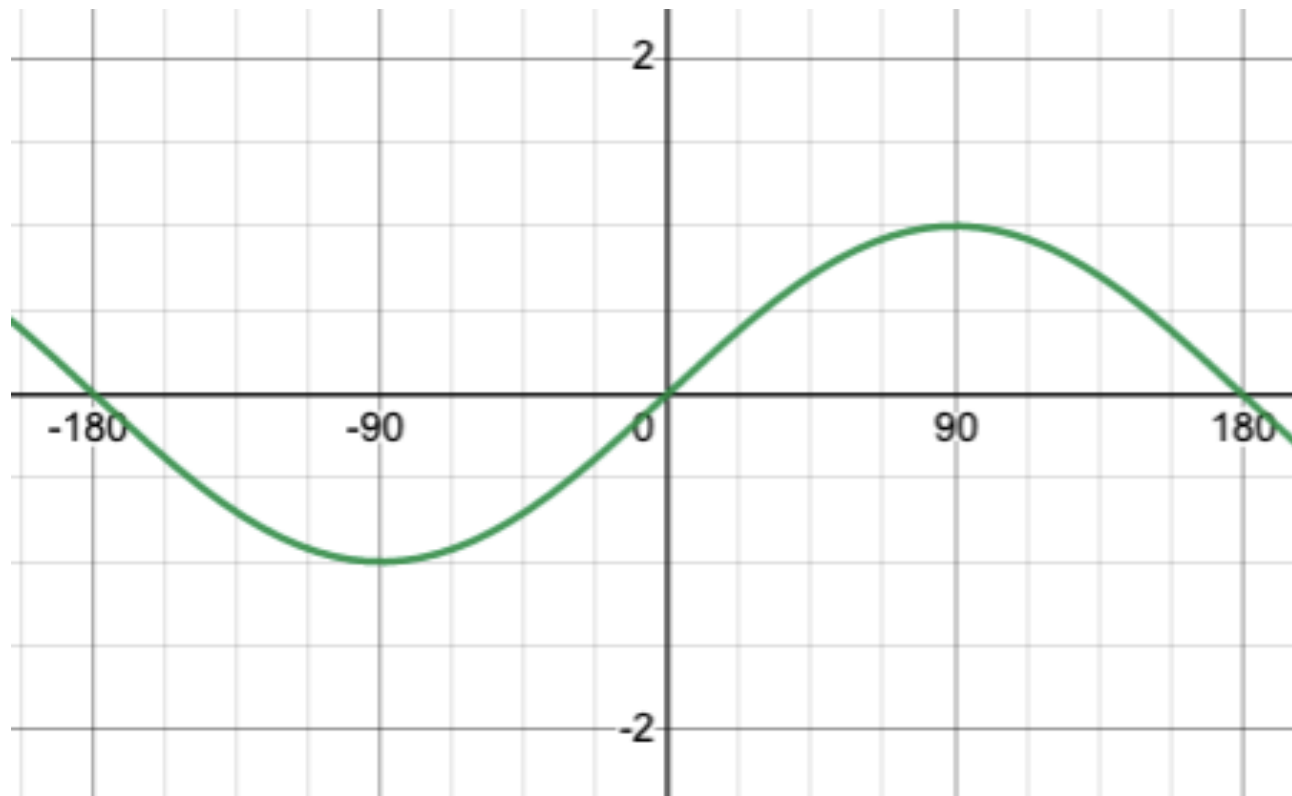
Graphing Sine and Cosine

4.2 - Translations of Sine and Cosine

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Graph one period

$$y = -3 \sin(-2(x + 90^\circ)) + 2$$



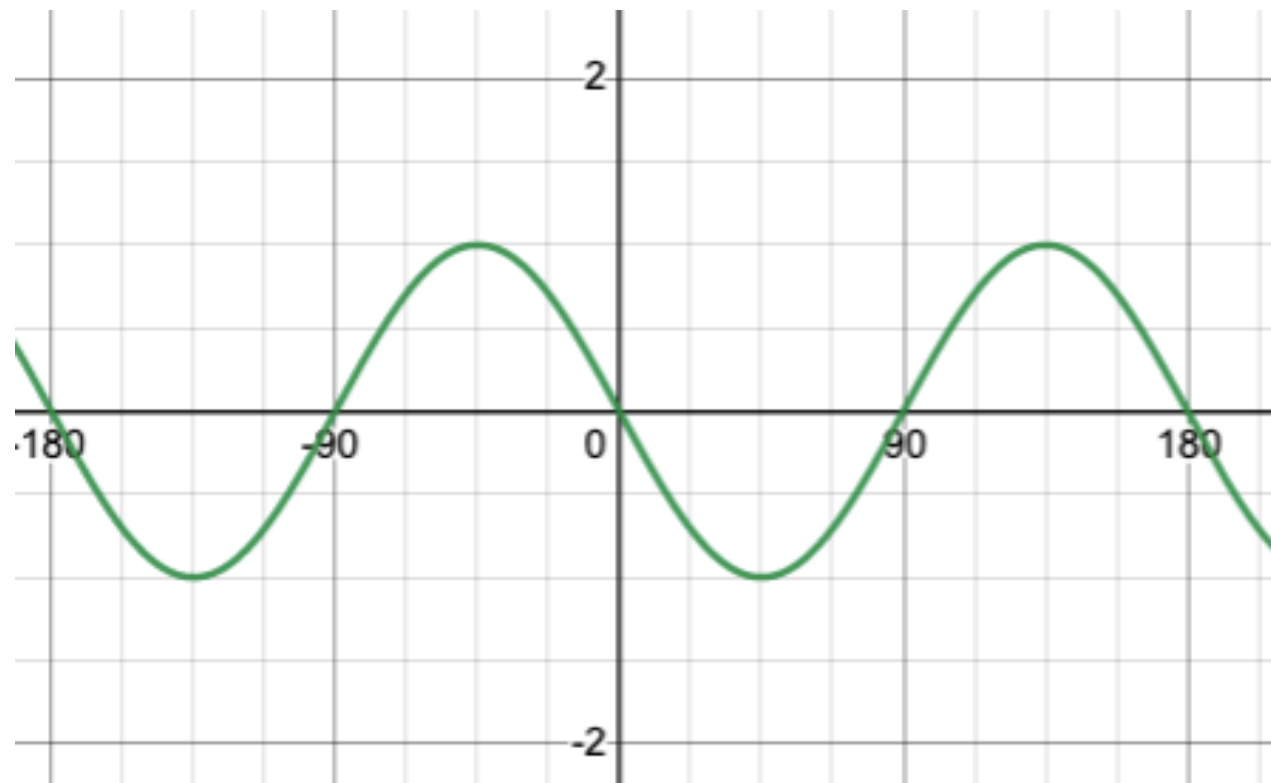
$$y = \sin(x)$$

4.2 - Translations of Sine and Cosine

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Graph one period

$$y = -3 \sin(-2(x + 90^\circ)) + 2$$



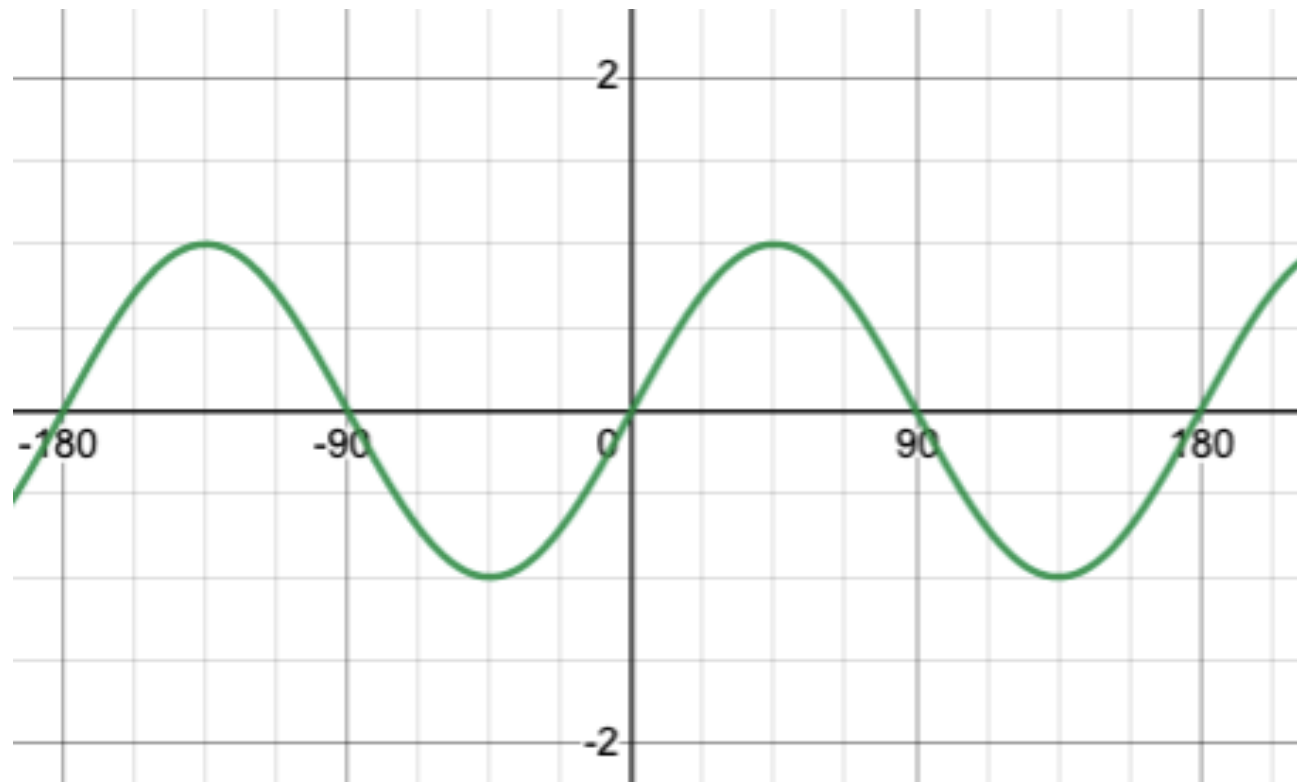
$$y = \sin(-2x)$$

4.2 - Translations of Sine and Cosine

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Graph one period

$$y = -3 \sin(-2(x + 90^\circ)) + 2$$



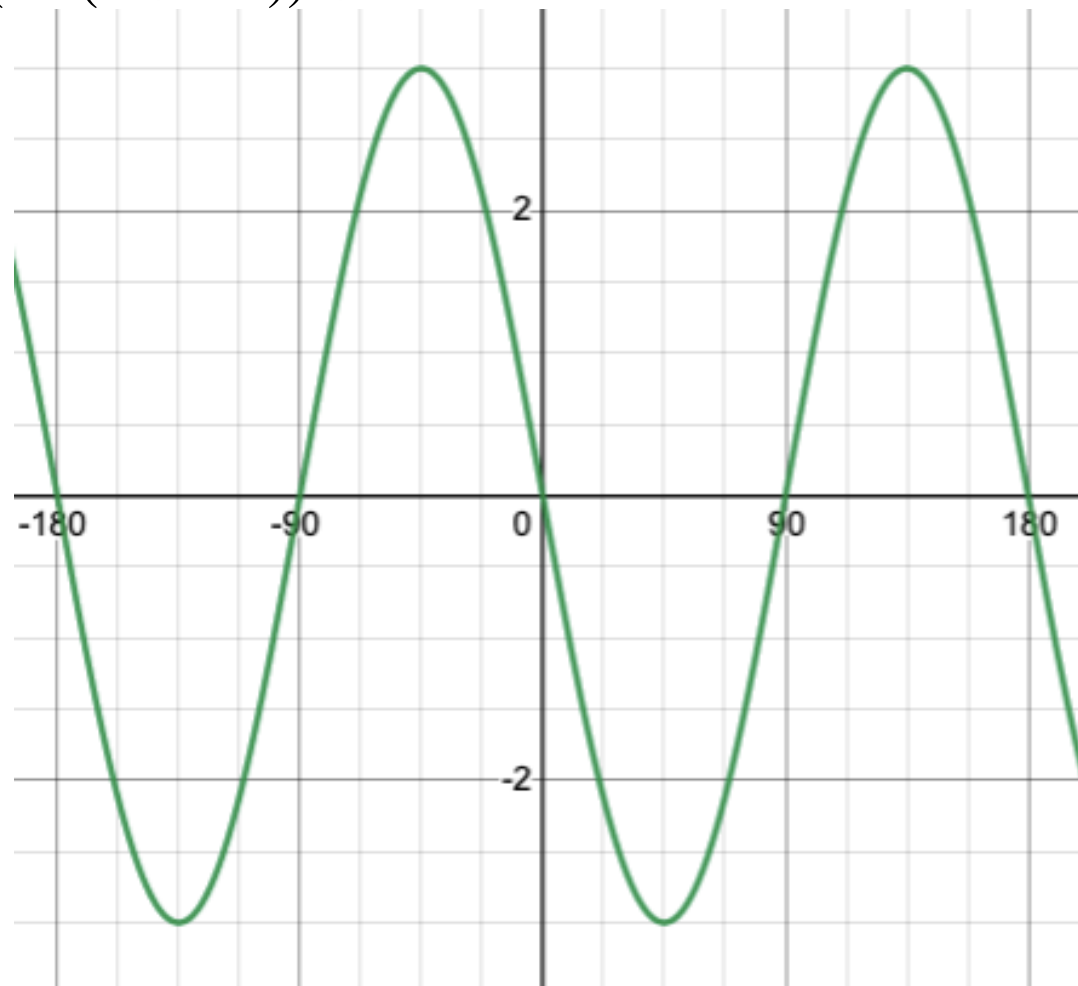
$$y = \sin(-2(x + 90^\circ))$$

4.2 - Translations of Sine and Cosine

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Graph one period

$$y = -3 \sin(-2(x + 90^\circ)) + 2$$



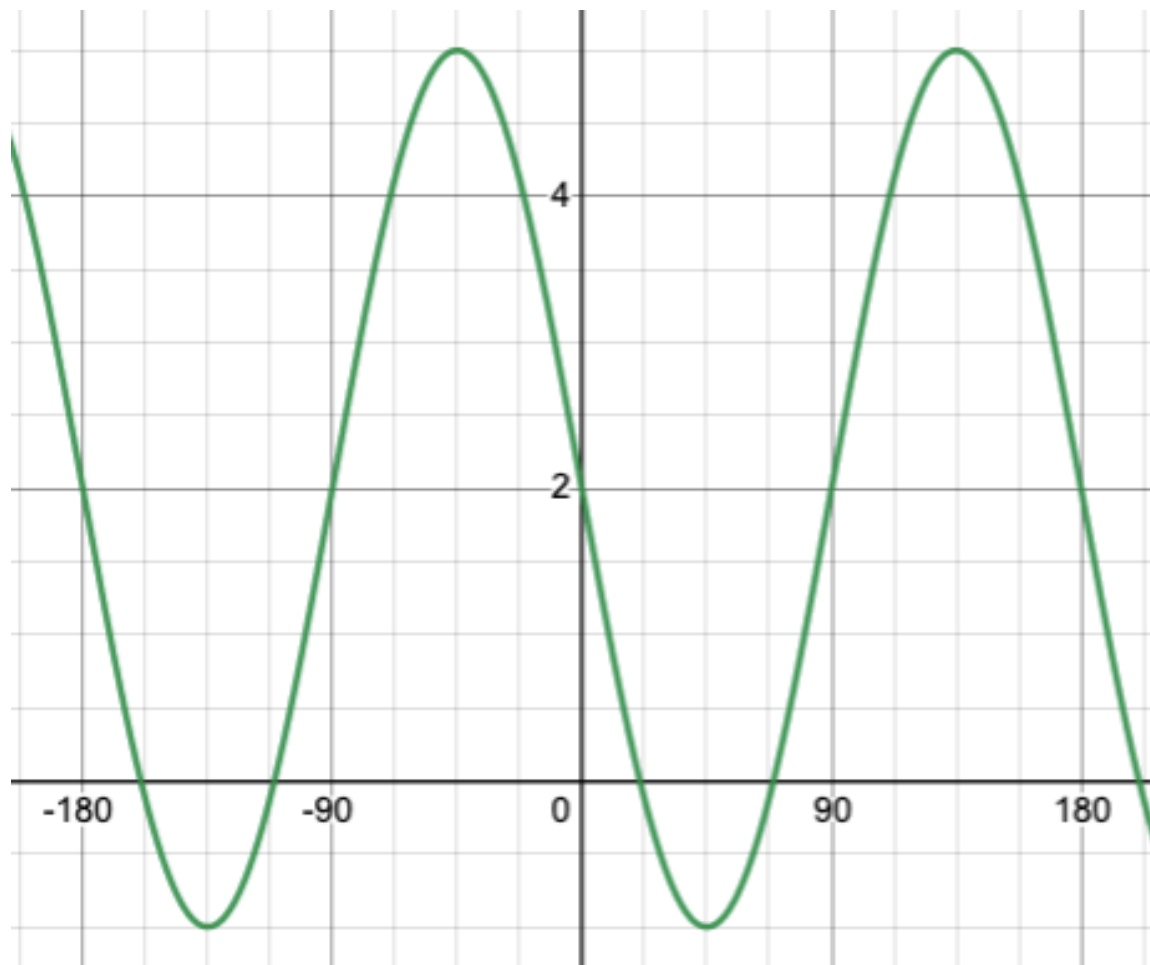
$$y = -3 \sin(-2(x + 90^\circ))$$

4.2 - Translations of Sine and Cosine

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Graph one period

$$y = -3 \sin(-2(x + 90^\circ)) + 2$$

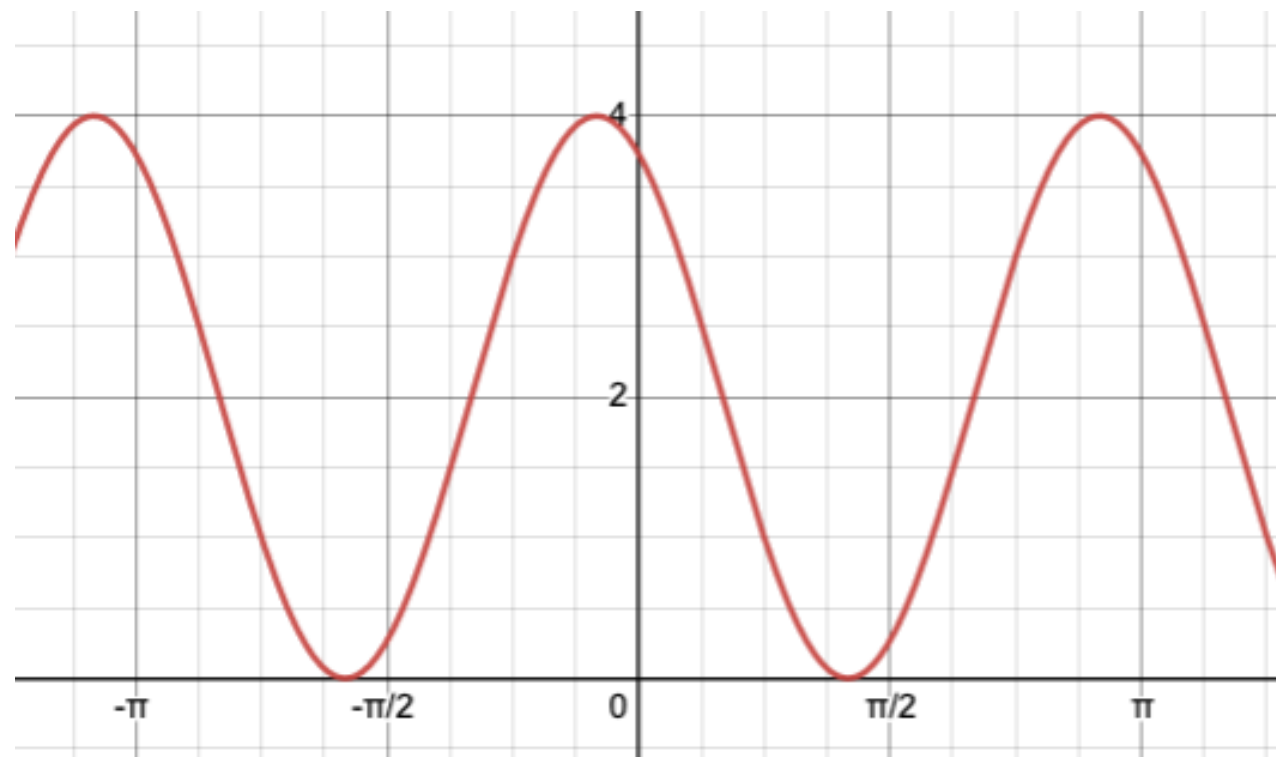


4.2 - Translations of Sine and Cosine

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Graph one period

$$y = 2 \sin\left(-2x + \frac{\pi}{3}\right) + 2$$





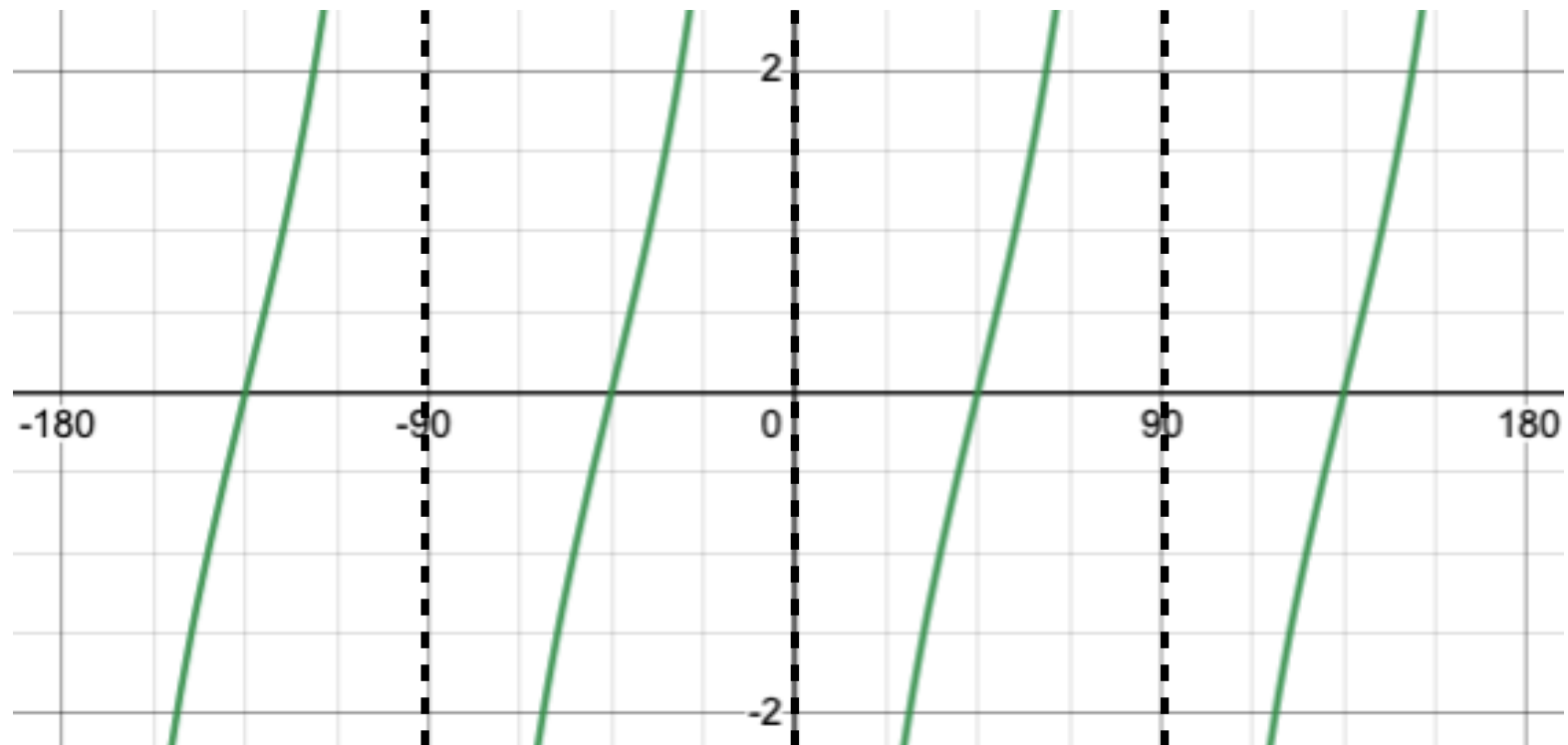
Graphing Tangent and Cotangent

4.3 - Graphing Tangent, Cotangent, Secant, Cosecant

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Graph two periods

$$y = 3 \tan(2\theta + 90^\circ)$$

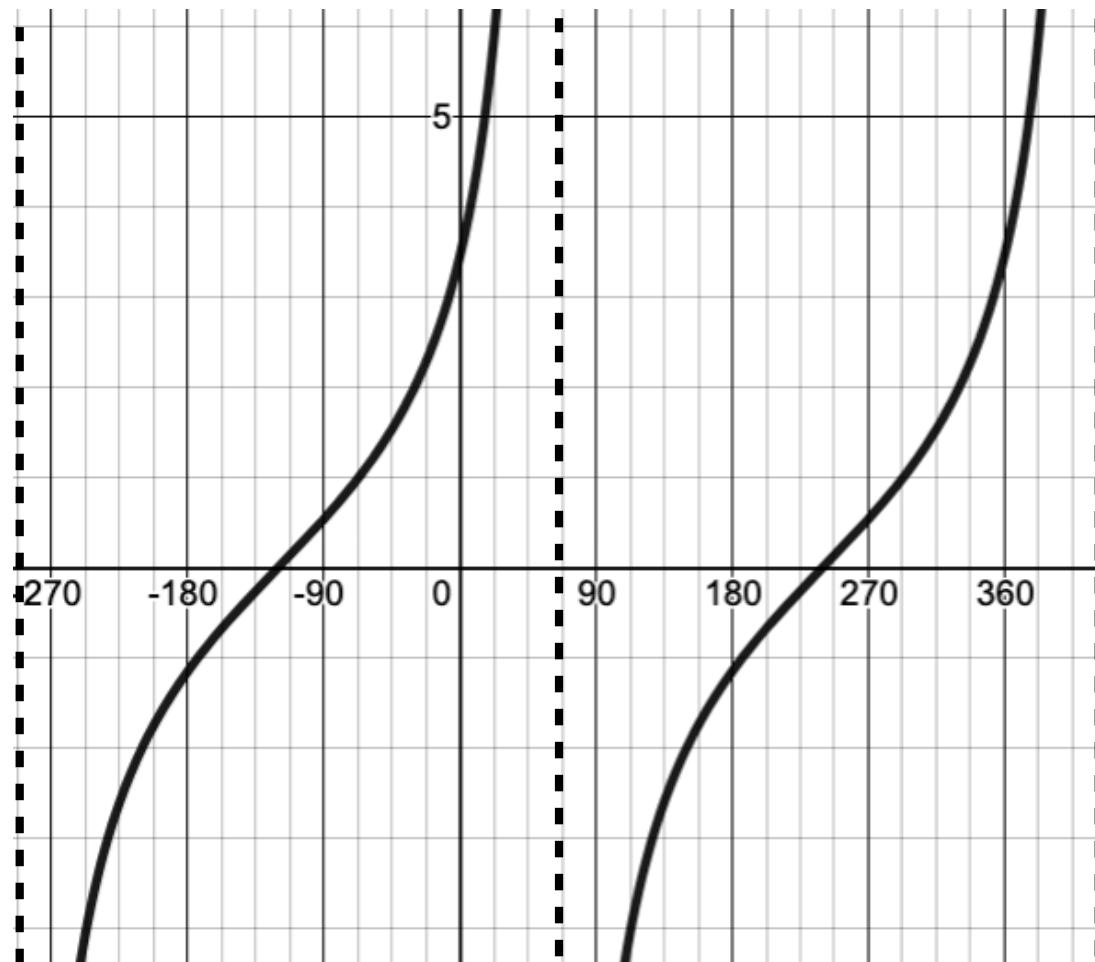


4.3 - Graphing Tangent, Cotangent, Secant, Cosecant

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Graph two periods

$$y = -2 \cot \left(\frac{1}{2} \theta - 30^\circ \right)$$





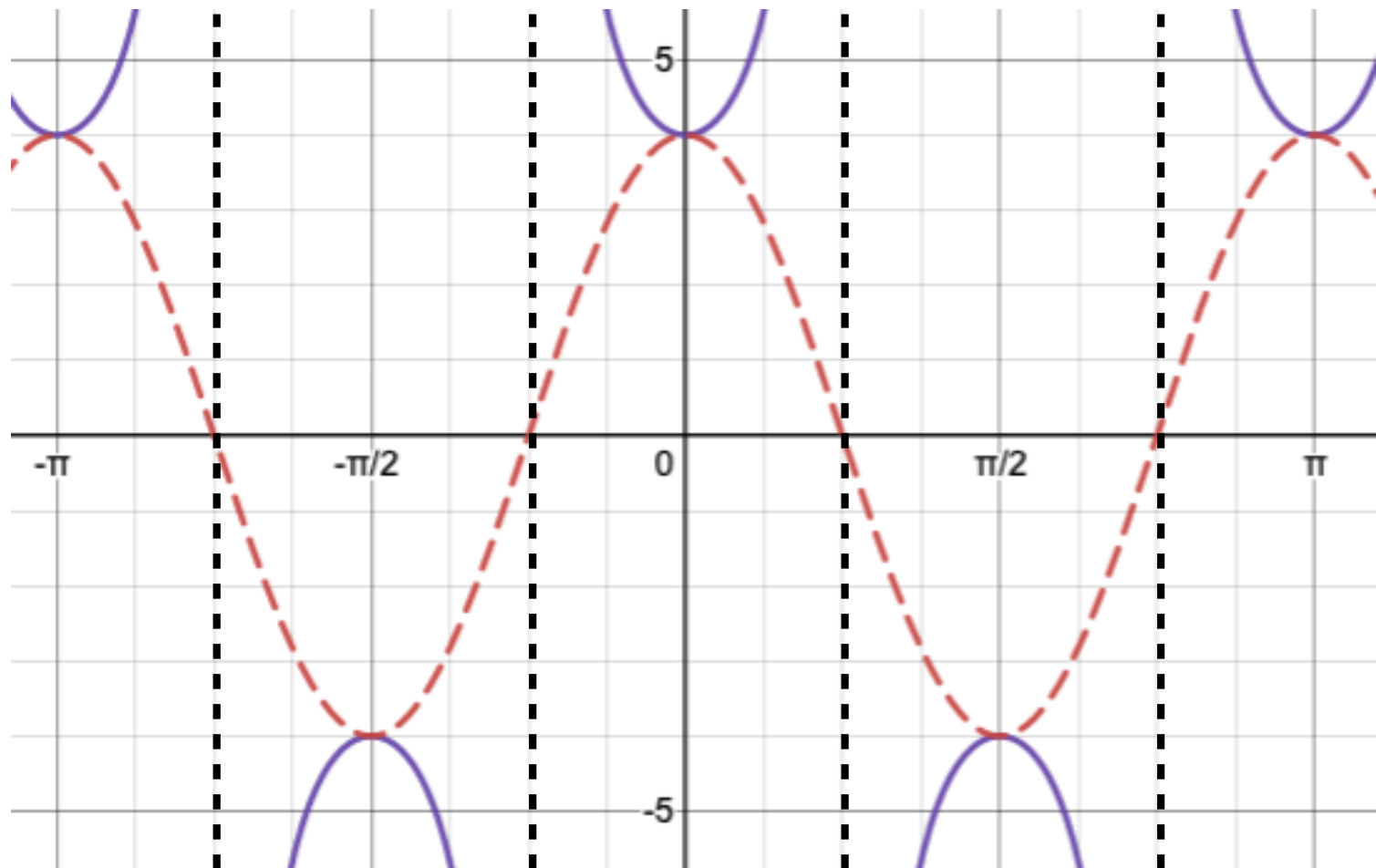
Graphing Secant and Cosecant

4.3 - Graphing Tangent, Cotangent, Secant, Cosecant

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Graph one period of cosine and secant

$$y = 4 \sec 2\theta$$

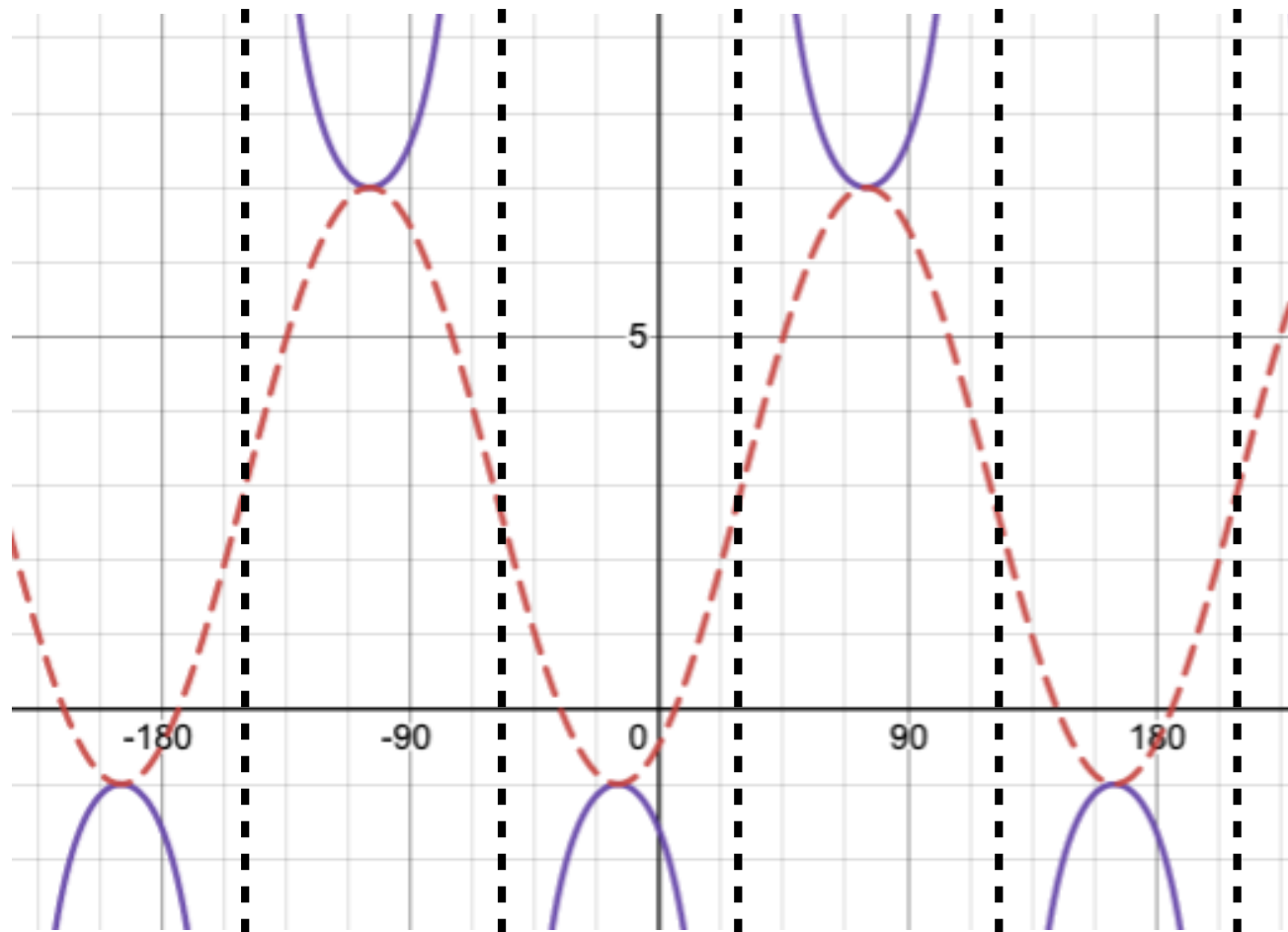


4.3 - Graphing Tangent, Cotangent, Secant, Cosecant

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Graph one period of sine and cosecant

$$y = -4 \csc(-2\theta + 60^\circ) + 3$$





Arc Length and Secant Area

3.2 - Arc Length and Area of a Circular Sector

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Find the circumference of

1) a circle circumscribed about a right triangle whose legs are 12 inches and 16 inches long

$\approx 62.83 \text{ in}$

2) a circle circumscribed about a square with a side length of 6 centimeters

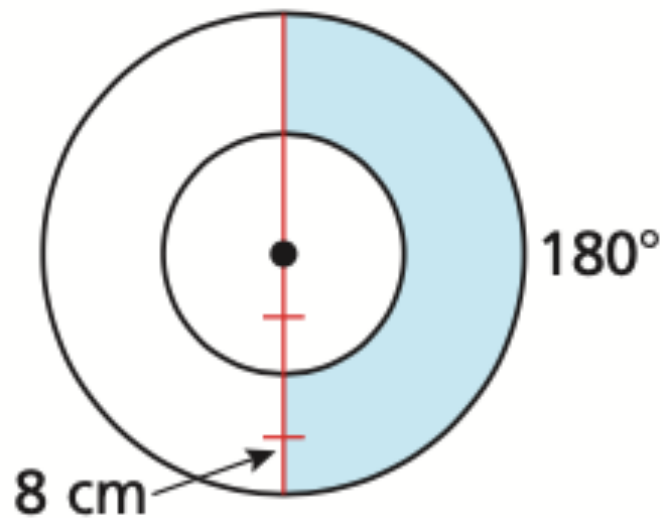
$\approx 26.66 \text{ cm}$

3.2 - Arc Length and Area of a Circular Sector

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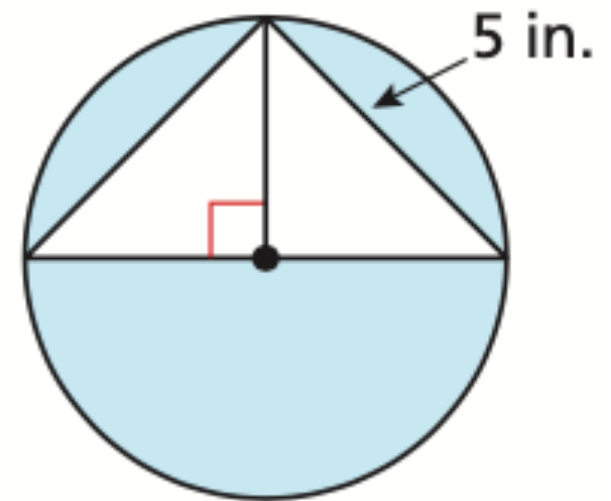
Find the area of the shaded region.

1)



$$\approx 301.59 \text{ cm}^2$$

2)



$$\approx 26.77 \text{ in}^2$$

