Inverse Trigonometric Functions and Core Identities

Inverse trig functions, core identities, and the symbolic fluency needed for later analytic trigonometry.

Name _____ Date _____

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Completion Reward

Shown here as a small pack artifact, not a preview destination.

1. Which interval is the principal range of y = arcsin(x)?

A. [0, pi]
B. [-pi / 2, pi / 2]
C. (-pi, pi)
D. [0, 2pi]

1.1. What is the principal range of arctan(x)?

A. (-pi/2, pi/2)
B. [0, pi]
C. [0, 2pi]
D. [-pi, pi]

1.2. arcsin(1/2) asks for:

A. the reciprocal of sin(1/2)
B. the angle whose sine is 1/2
C. the sine of angle 1/2
D. the angle whose cosine is 1/2

1.3. arccos(0) equals:

A. 0
B. pi/2
C. pi
D. 3pi/2

1.4. arcsin(-1) equals:

A. -pi/2
B. pi/2
C. pi
D. 0

1.5. Which statement is correct?

A. arccos(x) = 1/cos(x)
B. arccos(x) asks for an angle
C. arccos(x) always equals x
D. arccos(x) is undefined for every negative input

2. Which interval is the principal range of y = arccos(x)?

A. [-pi / 2, pi / 2]
B. [0, pi]
C. (-pi, pi)
D. [0, 2pi]

2.1. What is the principal range of arctan(x)?

A. (-pi/2, pi/2)
B. [0, pi]
C. [0, 2pi]
D. [-pi, pi]

2.2. arcsin(1/2) asks for:

A. the reciprocal of sin(1/2)
B. the angle whose sine is 1/2
C. the sine of angle 1/2
D. the angle whose cosine is 1/2

2.3. arccos(0) equals:

A. 0
B. pi/2
C. pi
D. 3pi/2

2.4. arcsin(-1) equals:

A. -pi/2
B. pi/2
C. pi
D. 0

2.5. Which statement is correct?

A. arccos(x) = 1/cos(x)
B. arccos(x) asks for an angle
C. arccos(x) always equals x
D. arccos(x) is undefined for every negative input

3. Which interval is the principal range of y = arctan(x)?

A. [0, pi]
B. [-pi, pi]
C. (-pi / 2, pi / 2)
D. [0, 2pi]

3.1. What is the principal range of arctan(x)?

A. (-pi/2, pi/2)
B. [0, pi]
C. [0, 2pi]
D. [-pi, pi]

3.2. arcsin(1/2) asks for:

A. the reciprocal of sin(1/2)
B. the angle whose sine is 1/2
C. the sine of angle 1/2
D. the angle whose cosine is 1/2

3.3. arccos(0) equals:

A. 0
B. pi/2
C. pi
D. 3pi/2

3.4. arcsin(-1) equals:

A. -pi/2
B. pi/2
C. pi
D. 0

3.5. Which statement is correct?

A. arccos(x) = 1/cos(x)
B. arccos(x) asks for an angle
C. arccos(x) always equals x
D. arccos(x) is undefined for every negative input

4. Which statement is true?

A. cos(-x) = cos(x)
B. cos(-x) = -cos(x)
C. sin(-x) = sin(x)
D. tan(-x) = tan(x)

4.1. Which statement is true?

A. sin(-x) = sin(x)
B. sin(-x) = -sin(x)
C. cos(-x) = -cos(x)
D. tan(-x) = tan(x)

4.2. Which statement is true?

A. cos(-x) = -cos(x)
B. cos(-x) = cos(x)
C. sin(-x) = sin(x)
D. sec(-x) = -sec(x)

4.3. Which statement is true?

A. tan(-x) = tan(x)
B. tan(-x) = -tan(x)
C. tan(x) = sec(x)
D. tan(x) = cos(x)

4.4. Rewrite cos(-theta).

A. -cos(theta)
B. cos(theta)
C. -sin(theta)
D. sin(theta)

4.5. Rewrite tan(-theta).

A. tan(theta)
B. -tan(theta)
C. sec(theta)
D. -sec(theta)

5. Which statement is true?

A. sin(-x) = -sin(x)
B. sin(-x) = sin(x)
C. sin(x) = cos(x)
D. sin(x) = 1 / cos(x)

5.1. Which statement is true?

A. sin(-x) = sin(x)
B. sin(-x) = -sin(x)
C. cos(-x) = -cos(x)
D. tan(-x) = tan(x)

5.2. Which statement is true?

A. cos(-x) = -cos(x)
B. cos(-x) = cos(x)
C. sin(-x) = sin(x)
D. sec(-x) = -sec(x)

5.3. Which statement is true?

A. tan(-x) = tan(x)
B. tan(-x) = -tan(x)
C. tan(x) = sec(x)
D. tan(x) = cos(x)

5.4. Rewrite cos(-theta).

A. -cos(theta)
B. cos(theta)
C. -sin(theta)
D. sin(theta)

5.5. Rewrite tan(-theta).

A. tan(theta)
B. -tan(theta)
C. sec(theta)
D. -sec(theta)

6. Which statement is true?

A. tan(-x) = tan(x)
B. tan(-x) = -tan(x)
C. tan(x) = sec(x)
D. tan(x) = 1 / sin(x)

6.1. Which statement is true?

A. sin(-x) = sin(x)
B. sin(-x) = -sin(x)
C. cos(-x) = -cos(x)
D. tan(-x) = tan(x)

6.2. Which statement is true?

A. cos(-x) = -cos(x)
B. cos(-x) = cos(x)
C. sin(-x) = sin(x)
D. sec(-x) = -sec(x)

6.3. Which statement is true?

A. tan(-x) = tan(x)
B. tan(-x) = -tan(x)
C. tan(x) = sec(x)
D. tan(x) = cos(x)

6.4. Rewrite cos(-theta).

A. -cos(theta)
B. cos(theta)
C. -sin(theta)
D. sin(theta)

6.5. Rewrite tan(-theta).

A. tan(theta)
B. -tan(theta)
C. sec(theta)
D. -sec(theta)

7. Which identity is always true?

A. sin(x) + cos(x) = 1
B. sin^2(x) + cos^2(x) = 1
C. tan(x) + sec(x) = 1
D. sin^2(x) - cos^2(x) = 1

7.1. sec(x) equals:

A. 1/sin(x)
B. 1/cos(x)
C. sin(x)/cos(x)
D. cos(x)/sin(x)

7.2. 1 + tan^2(x) equals:

A. sin^2(x)
B. cos^2(x)
C. sec^2(x)
D. csc^2(x)

7.3. 1 + cot^2(x) equals:

A. sec^2(x)
B. csc^2(x)
C. sin^2(x)
D. cos^2(x)

7.4. 1 - sin^2(x) can be rewritten as:

A. tan^2(x)
B. cos^2(x)
C. sec^2(x)
D. 1 + cos^2(x)

7.5. Which identity is always true?

A. sin^2(x) + cos^2(x) = 1
B. sin(x) + cos(x) = 1
C. tan(x) + sec(x) = 1
D. sin^2(x) - cos^2(x) = 1

8. Which identity is always true?

A. 1 + sec^2(x) = tan^2(x)
B. 1 + tan^2(x) = sec^2(x)
C. tan^2(x) + sec^2(x) = 1
D. 1 - tan^2(x) = sec^2(x)

8.1. sec(x) equals:

A. 1/sin(x)
B. 1/cos(x)
C. sin(x)/cos(x)
D. cos(x)/sin(x)

8.2. 1 + tan^2(x) equals:

A. sin^2(x)
B. cos^2(x)
C. sec^2(x)
D. csc^2(x)

8.3. 1 + cot^2(x) equals:

A. sec^2(x)
B. csc^2(x)
C. sin^2(x)
D. cos^2(x)

8.4. 1 - sin^2(x) can be rewritten as:

A. tan^2(x)
B. cos^2(x)
C. sec^2(x)
D. 1 + cos^2(x)

8.5. Which identity is always true?

A. sin^2(x) + cos^2(x) = 1
B. sin(x) + cos(x) = 1
C. tan(x) + sec(x) = 1
D. sin^2(x) - cos^2(x) = 1

9. Which identity is always true?

A. 1 + csc^2(x) = cot^2(x)
B. cot^2(x) + csc^2(x) = 1
C. 1 + cot^2(x) = csc^2(x)
D. 1 - cot^2(x) = csc^2(x)

9.1. sec(x) equals:

A. 1/sin(x)
B. 1/cos(x)
C. sin(x)/cos(x)
D. cos(x)/sin(x)

9.2. 1 + tan^2(x) equals:

A. sin^2(x)
B. cos^2(x)
C. sec^2(x)
D. csc^2(x)

9.3. 1 + cot^2(x) equals:

A. sec^2(x)
B. csc^2(x)
C. sin^2(x)
D. cos^2(x)

9.4. 1 - sin^2(x) can be rewritten as:

A. tan^2(x)
B. cos^2(x)
C. sec^2(x)
D. 1 + cos^2(x)

9.5. Which identity is always true?

A. sin^2(x) + cos^2(x) = 1
B. sin(x) + cos(x) = 1
C. tan(x) + sec(x) = 1
D. sin^2(x) - cos^2(x) = 1

10. What does arccos(1 / 2) ask for?

A. The reciprocal of cos(1 / 2)
B. The angle whose sine is 1 / 2
C. The value of 1 / cos(2)
D. The angle whose cosine is 1 / 2

10.1. What is the principal range of arctan(x)?

A. (-pi/2, pi/2)
B. [0, pi]
C. [0, 2pi]
D. [-pi, pi]

10.2. arcsin(1/2) asks for:

A. the reciprocal of sin(1/2)
B. the angle whose sine is 1/2
C. the sine of angle 1/2
D. the angle whose cosine is 1/2

10.3. arccos(0) equals:

A. 0
B. pi/2
C. pi
D. 3pi/2

10.4. arcsin(-1) equals:

A. -pi/2
B. pi/2
C. pi
D. 0

10.5. Which statement is correct?

A. arccos(x) = 1/cos(x)
B. arccos(x) asks for an angle
C. arccos(x) always equals x
D. arccos(x) is undefined for every negative input

11. Which reciprocal relationship is correct?

A. sec(x) = 1 / sin(x)
B. sec(x) = cos(x) / sin(x)
C. sec(x) = 1 / cos(x)
D. sec(x) = sin(x) / cos(x)

11.1. sec(x) equals:

A. 1/sin(x)
B. 1/cos(x)
C. sin(x)/cos(x)
D. cos(x)/sin(x)

11.2. 1 + tan^2(x) equals:

A. sin^2(x)
B. cos^2(x)
C. sec^2(x)
D. csc^2(x)

11.3. 1 + cot^2(x) equals:

A. sec^2(x)
B. csc^2(x)
C. sin^2(x)
D. cos^2(x)

11.4. 1 - sin^2(x) can be rewritten as:

A. tan^2(x)
B. cos^2(x)
C. sec^2(x)
D. 1 + cos^2(x)

11.5. Which identity is always true?

A. sin^2(x) + cos^2(x) = 1
B. sin(x) + cos(x) = 1
C. tan(x) + sec(x) = 1
D. sin^2(x) - cos^2(x) = 1

12. If sin(theta) = 1 / 3, what is csc(theta)?

A. 1 / 3
B. -3
C. 3
D. 2 / 3

12.1. sec(x) equals:

A. 1/sin(x)
B. 1/cos(x)
C. sin(x)/cos(x)
D. cos(x)/sin(x)

12.2. 1 + tan^2(x) equals:

A. sin^2(x)
B. cos^2(x)
C. sec^2(x)
D. csc^2(x)

12.3. 1 + cot^2(x) equals:

A. sec^2(x)
B. csc^2(x)
C. sin^2(x)
D. cos^2(x)

12.4. 1 - sin^2(x) can be rewritten as:

A. tan^2(x)
B. cos^2(x)
C. sec^2(x)
D. 1 + cos^2(x)

12.5. Which identity is always true?

A. sin^2(x) + cos^2(x) = 1
B. sin(x) + cos(x) = 1
C. tan(x) + sec(x) = 1
D. sin^2(x) - cos^2(x) = 1

13. To simplify 1 - sin^2(x), what is the best next step?

A. Replace it with tan^2(x)
B. Replace it with sec^2(x)
C. Replace it with cos^2(x)
D. Replace it with sin(x)

13.1. sec(x) equals:

A. 1/sin(x)
B. 1/cos(x)
C. sin(x)/cos(x)
D. cos(x)/sin(x)

13.2. 1 + tan^2(x) equals:

A. sin^2(x)
B. cos^2(x)
C. sec^2(x)
D. csc^2(x)

13.3. 1 + cot^2(x) equals:

A. sec^2(x)
B. csc^2(x)
C. sin^2(x)
D. cos^2(x)

13.4. 1 - sin^2(x) can be rewritten as:

A. tan^2(x)
B. cos^2(x)
C. sec^2(x)
D. 1 + cos^2(x)

13.5. Which identity is always true?

A. sin^2(x) + cos^2(x) = 1
B. sin(x) + cos(x) = 1
C. tan(x) + sec(x) = 1
D. sin^2(x) - cos^2(x) = 1

14. What is the best first step to find cos(arcsin(3 / 5))?

A. Draw a right triangle with adjacent 3 and hypotenuse 5
B. Treat cos(arcsin(3 / 5)) as 3 / 5 immediately
C. Draw a right triangle with opposite 3 and hypotenuse 5
D. Use a double-angle identity

14.1. What is the principal range of arctan(x)?

A. (-pi/2, pi/2)
B. [0, pi]
C. [0, 2pi]
D. [-pi, pi]

14.2. arcsin(1/2) asks for:

A. the reciprocal of sin(1/2)
B. the angle whose sine is 1/2
C. the sine of angle 1/2
D. the angle whose cosine is 1/2

14.3. arccos(0) equals:

A. 0
B. pi/2
C. pi
D. 3pi/2

14.4. arcsin(-1) equals:

A. -pi/2
B. pi/2
C. pi
D. 0

14.5. Which statement is correct?

A. arccos(x) = 1/cos(x)
B. arccos(x) asks for an angle
C. arccos(x) always equals x
D. arccos(x) is undefined for every negative input

15. A student says arccos(-1 / 2) = 4pi / 3. What is the mistake?

A. The value should be negative
B. arccos can only output acute angles
C. 4pi / 3 is outside the principal range of arccos
D. arccos(-1 / 2) does not exist

15.1. What is the principal range of arctan(x)?

A. (-pi/2, pi/2)
B. [0, pi]
C. [0, 2pi]
D. [-pi, pi]

15.2. arcsin(1/2) asks for:

A. the reciprocal of sin(1/2)
B. the angle whose sine is 1/2
C. the sine of angle 1/2
D. the angle whose cosine is 1/2

15.3. arccos(0) equals:

A. 0
B. pi/2
C. pi
D. 3pi/2

15.4. arcsin(-1) equals:

A. -pi/2
B. pi/2
C. pi
D. 0

15.5. Which statement is correct?

A. arccos(x) = 1/cos(x)
B. arccos(x) asks for an angle
C. arccos(x) always equals x
D. arccos(x) is undefined for every negative input

16. Find arcsin(1 / 2). Answer as an exact value.

16.1. What is the principal range of arctan(x)?

A. (-pi/2, pi/2)
B. [0, pi]
C. [0, 2pi]
D. [-pi, pi]

16.2. arcsin(1/2) asks for:

A. the reciprocal of sin(1/2)
B. the angle whose sine is 1/2
C. the sine of angle 1/2
D. the angle whose cosine is 1/2

16.3. arccos(0) equals:

A. 0
B. pi/2
C. pi
D. 3pi/2

16.4. arcsin(-1) equals:

A. -pi/2
B. pi/2
C. pi
D. 0

16.5. Which statement is correct?

A. arccos(x) = 1/cos(x)
B. arccos(x) asks for an angle
C. arccos(x) always equals x
D. arccos(x) is undefined for every negative input

17. Find arcsin(-sqrt(2) / 2). Answer as an exact value.

17.1. What is the principal range of arctan(x)?

A. (-pi/2, pi/2)
B. [0, pi]
C. [0, 2pi]
D. [-pi, pi]

17.2. arcsin(1/2) asks for:

A. the reciprocal of sin(1/2)
B. the angle whose sine is 1/2
C. the sine of angle 1/2
D. the angle whose cosine is 1/2

17.3. arccos(0) equals:

A. 0
B. pi/2
C. pi
D. 3pi/2

17.4. arcsin(-1) equals:

A. -pi/2
B. pi/2
C. pi
D. 0

17.5. Which statement is correct?

A. arccos(x) = 1/cos(x)
B. arccos(x) asks for an angle
C. arccos(x) always equals x
D. arccos(x) is undefined for every negative input

18. Find arccos(0). Answer as an exact value.

18.1. What is the principal range of arctan(x)?

A. (-pi/2, pi/2)
B. [0, pi]
C. [0, 2pi]
D. [-pi, pi]

18.2. arcsin(1/2) asks for:

A. the reciprocal of sin(1/2)
B. the angle whose sine is 1/2
C. the sine of angle 1/2
D. the angle whose cosine is 1/2

18.3. arccos(0) equals:

A. 0
B. pi/2
C. pi
D. 3pi/2

18.4. arcsin(-1) equals:

A. -pi/2
B. pi/2
C. pi
D. 0

18.5. Which statement is correct?

A. arccos(x) = 1/cos(x)
B. arccos(x) asks for an angle
C. arccos(x) always equals x
D. arccos(x) is undefined for every negative input

19. Find arccos(-1). Answer as an exact value.

19.1. What is the principal range of arctan(x)?

A. (-pi/2, pi/2)
B. [0, pi]
C. [0, 2pi]
D. [-pi, pi]

19.2. arcsin(1/2) asks for:

A. the reciprocal of sin(1/2)
B. the angle whose sine is 1/2
C. the sine of angle 1/2
D. the angle whose cosine is 1/2

19.3. arccos(0) equals:

A. 0
B. pi/2
C. pi
D. 3pi/2

19.4. arcsin(-1) equals:

A. -pi/2
B. pi/2
C. pi
D. 0

19.5. Which statement is correct?

A. arccos(x) = 1/cos(x)
B. arccos(x) asks for an angle
C. arccos(x) always equals x
D. arccos(x) is undefined for every negative input

20. Find arctan(1). Answer as an exact value.

20.1. What is the principal range of arctan(x)?

A. (-pi/2, pi/2)
B. [0, pi]
C. [0, 2pi]
D. [-pi, pi]

20.2. arcsin(1/2) asks for:

A. the reciprocal of sin(1/2)
B. the angle whose sine is 1/2
C. the sine of angle 1/2
D. the angle whose cosine is 1/2

20.3. arccos(0) equals:

A. 0
B. pi/2
C. pi
D. 3pi/2

20.4. arcsin(-1) equals:

A. -pi/2
B. pi/2
C. pi
D. 0

20.5. Which statement is correct?

A. arccos(x) = 1/cos(x)
B. arccos(x) asks for an angle
C. arccos(x) always equals x
D. arccos(x) is undefined for every negative input

21. Find arctan(sqrt(3)). Answer as an exact value.

21.1. What is the principal range of arctan(x)?

A. (-pi/2, pi/2)
B. [0, pi]
C. [0, 2pi]
D. [-pi, pi]

21.2. arcsin(1/2) asks for:

A. the reciprocal of sin(1/2)
B. the angle whose sine is 1/2
C. the sine of angle 1/2
D. the angle whose cosine is 1/2

21.3. arccos(0) equals:

A. 0
B. pi/2
C. pi
D. 3pi/2

21.4. arcsin(-1) equals:

A. -pi/2
B. pi/2
C. pi
D. 0

21.5. Which statement is correct?

A. arccos(x) = 1/cos(x)
B. arccos(x) asks for an angle
C. arccos(x) always equals x
D. arccos(x) is undefined for every negative input

22. Find cos(arcsin(3 / 5)). Answer as an exact value.

22.1. What is the principal range of arctan(x)?

A. (-pi/2, pi/2)
B. [0, pi]
C. [0, 2pi]
D. [-pi, pi]

22.2. arcsin(1/2) asks for:

A. the reciprocal of sin(1/2)
B. the angle whose sine is 1/2
C. the sine of angle 1/2
D. the angle whose cosine is 1/2

22.3. arccos(0) equals:

A. 0
B. pi/2
C. pi
D. 3pi/2

22.4. arcsin(-1) equals:

A. -pi/2
B. pi/2
C. pi
D. 0

22.5. Which statement is correct?

A. arccos(x) = 1/cos(x)
B. arccos(x) asks for an angle
C. arccos(x) always equals x
D. arccos(x) is undefined for every negative input

23. Find sin(arccos(5 / 13)). Answer as an exact value.

23.1. What is the principal range of arctan(x)?

A. (-pi/2, pi/2)
B. [0, pi]
C. [0, 2pi]
D. [-pi, pi]

23.2. arcsin(1/2) asks for:

A. the reciprocal of sin(1/2)
B. the angle whose sine is 1/2
C. the sine of angle 1/2
D. the angle whose cosine is 1/2

23.3. arccos(0) equals:

A. 0
B. pi/2
C. pi
D. 3pi/2

23.4. arcsin(-1) equals:

A. -pi/2
B. pi/2
C. pi
D. 0

23.5. Which statement is correct?

A. arccos(x) = 1/cos(x)
B. arccos(x) asks for an angle
C. arccos(x) always equals x
D. arccos(x) is undefined for every negative input

24. Find tan(arcsin(3 / 5)). Answer as an exact value.

24.1. What is the principal range of arctan(x)?

A. (-pi/2, pi/2)
B. [0, pi]
C. [0, 2pi]
D. [-pi, pi]

24.2. arcsin(1/2) asks for:

A. the reciprocal of sin(1/2)
B. the angle whose sine is 1/2
C. the sine of angle 1/2
D. the angle whose cosine is 1/2

24.3. arccos(0) equals:

A. 0
B. pi/2
C. pi
D. 3pi/2

24.4. arcsin(-1) equals:

A. -pi/2
B. pi/2
C. pi
D. 0

24.5. Which statement is correct?

A. arccos(x) = 1/cos(x)
B. arccos(x) asks for an angle
C. arccos(x) always equals x
D. arccos(x) is undefined for every negative input

25. Find sec(arccos(1 / 2)). Answer with a number.

25.1. What is the principal range of arctan(x)?

A. (-pi/2, pi/2)
B. [0, pi]
C. [0, 2pi]
D. [-pi, pi]

25.2. arcsin(1/2) asks for:

A. the reciprocal of sin(1/2)
B. the angle whose sine is 1/2
C. the sine of angle 1/2
D. the angle whose cosine is 1/2

25.3. arccos(0) equals:

A. 0
B. pi/2
C. pi
D. 3pi/2

25.4. arcsin(-1) equals:

A. -pi/2
B. pi/2
C. pi
D. 0

25.5. Which statement is correct?

A. arccos(x) = 1/cos(x)
B. arccos(x) asks for an angle
C. arccos(x) always equals x
D. arccos(x) is undefined for every negative input

26. Find csc(arcsin(-1 / 2)). Answer with a number.

26.1. What is the principal range of arctan(x)?

A. (-pi/2, pi/2)
B. [0, pi]
C. [0, 2pi]
D. [-pi, pi]

26.2. arcsin(1/2) asks for:

A. the reciprocal of sin(1/2)
B. the angle whose sine is 1/2
C. the sine of angle 1/2
D. the angle whose cosine is 1/2

26.3. arccos(0) equals:

A. 0
B. pi/2
C. pi
D. 3pi/2

26.4. arcsin(-1) equals:

A. -pi/2
B. pi/2
C. pi
D. 0

26.5. Which statement is correct?

A. arccos(x) = 1/cos(x)
B. arccos(x) asks for an angle
C. arccos(x) always equals x
D. arccos(x) is undefined for every negative input

27. Find cos(arctan(3 / 4)). Answer as an exact value.

27.1. What is the principal range of arctan(x)?

A. (-pi/2, pi/2)
B. [0, pi]
C. [0, 2pi]
D. [-pi, pi]

27.2. arcsin(1/2) asks for:

A. the reciprocal of sin(1/2)
B. the angle whose sine is 1/2
C. the sine of angle 1/2
D. the angle whose cosine is 1/2

27.3. arccos(0) equals:

A. 0
B. pi/2
C. pi
D. 3pi/2

27.4. arcsin(-1) equals:

A. -pi/2
B. pi/2
C. pi
D. 0

27.5. Which statement is correct?

A. arccos(x) = 1/cos(x)
B. arccos(x) asks for an angle
C. arccos(x) always equals x
D. arccos(x) is undefined for every negative input

28. Rewrite 1 - sin^2(x) using a Pythagorean identity. Answer as an expression.

28.1. sec(x) equals:

A. 1/sin(x)
B. 1/cos(x)
C. sin(x)/cos(x)
D. cos(x)/sin(x)

28.2. 1 + tan^2(x) equals:

A. sin^2(x)
B. cos^2(x)
C. sec^2(x)
D. csc^2(x)

28.3. 1 + cot^2(x) equals:

A. sec^2(x)
B. csc^2(x)
C. sin^2(x)
D. cos^2(x)

28.4. 1 - sin^2(x) can be rewritten as:

A. tan^2(x)
B. cos^2(x)
C. sec^2(x)
D. 1 + cos^2(x)

28.5. Which identity is always true?

A. sin^2(x) + cos^2(x) = 1
B. sin(x) + cos(x) = 1
C. tan(x) + sec(x) = 1
D. sin^2(x) - cos^2(x) = 1

29. Rewrite sec^2(x) - 1 using a Pythagorean identity. Answer as an expression.

29.1. sec(x) equals:

A. 1/sin(x)
B. 1/cos(x)
C. sin(x)/cos(x)
D. cos(x)/sin(x)

29.2. 1 + tan^2(x) equals:

A. sin^2(x)
B. cos^2(x)
C. sec^2(x)
D. csc^2(x)

29.3. 1 + cot^2(x) equals:

A. sec^2(x)
B. csc^2(x)
C. sin^2(x)
D. cos^2(x)

29.4. 1 - sin^2(x) can be rewritten as:

A. tan^2(x)
B. cos^2(x)
C. sec^2(x)
D. 1 + cos^2(x)

29.5. Which identity is always true?

A. sin^2(x) + cos^2(x) = 1
B. sin(x) + cos(x) = 1
C. tan(x) + sec(x) = 1
D. sin^2(x) - cos^2(x) = 1

30. Rewrite csc^2(x) - 1 using a Pythagorean identity. Answer as an expression.

30.1. sec(x) equals:

A. 1/sin(x)
B. 1/cos(x)
C. sin(x)/cos(x)
D. cos(x)/sin(x)

30.2. 1 + tan^2(x) equals:

A. sin^2(x)
B. cos^2(x)
C. sec^2(x)
D. csc^2(x)

30.3. 1 + cot^2(x) equals:

A. sec^2(x)
B. csc^2(x)
C. sin^2(x)
D. cos^2(x)

30.4. 1 - sin^2(x) can be rewritten as:

A. tan^2(x)
B. cos^2(x)
C. sec^2(x)
D. 1 + cos^2(x)

30.5. Which identity is always true?

A. sin^2(x) + cos^2(x) = 1
B. sin(x) + cos(x) = 1
C. tan(x) + sec(x) = 1
D. sin^2(x) - cos^2(x) = 1

31. Rewrite sin(-x) using symmetry. Answer as an expression.

31.1. Which statement is true?

A. sin(-x) = sin(x)
B. sin(-x) = -sin(x)
C. cos(-x) = -cos(x)
D. tan(-x) = tan(x)

31.2. Which statement is true?

A. cos(-x) = -cos(x)
B. cos(-x) = cos(x)
C. sin(-x) = sin(x)
D. sec(-x) = -sec(x)

31.3. Which statement is true?

A. tan(-x) = tan(x)
B. tan(-x) = -tan(x)
C. tan(x) = sec(x)
D. tan(x) = cos(x)

31.4. Rewrite cos(-theta).

A. -cos(theta)
B. cos(theta)
C. -sin(theta)
D. sin(theta)

31.5. Rewrite tan(-theta).

A. tan(theta)
B. -tan(theta)
C. sec(theta)
D. -sec(theta)

32. If sin(theta) = 3 / 5 and theta is acute, which value of cos(theta) is correct?

A. -4 / 5
B. 5 / 3
C. 4 / 5
D. 3 / 4

32.1. What is the principal range of arctan(x)?

A. (-pi/2, pi/2)
B. [0, pi]
C. [0, 2pi]
D. [-pi, pi]

32.2. arcsin(1/2) asks for:

A. the reciprocal of sin(1/2)
B. the angle whose sine is 1/2
C. the sine of angle 1/2
D. the angle whose cosine is 1/2

32.3. arccos(0) equals:

A. 0
B. pi/2
C. pi
D. 3pi/2

32.4. arcsin(-1) equals:

A. -pi/2
B. pi/2
C. pi
D. 0

32.5. Which statement is correct?

A. arccos(x) = 1/cos(x)
B. arccos(x) asks for an angle
C. arccos(x) always equals x
D. arccos(x) is undefined for every negative input