

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

### Precal – Algebra review

Simplify

1.  $\frac{x^4}{x}$

2.  $\frac{x}{x^5}$

3.  $\frac{x^5}{x^2}$

4.  $\frac{x^3}{x}$

5.  $\frac{x^3}{x^3}$

6.  $\frac{\frac{x}{2}}{\frac{1}{2}}$

7.  $\frac{\frac{1}{3}}{\frac{x}{3}}$

8.  $\frac{\frac{1}{3}}{\frac{x^2}{3^2}}$

9.  $\frac{1 + \frac{2}{x^2}}{\frac{1}{x^2}}$

10.  $\frac{\frac{1}{x} - \frac{2}{x}}{\frac{1}{x^2}}$

Multiply

11.  $(x + 1)(x - 1)$

12.  $(x - y)(x + y)$

13.  $(x - 4)(x + 4)$

14.  $x(x - 1)$

15.  $(x+2)^2$

16.  $(3 - x)^2$

17.  $(x + y)^2$

Factor

18.  $(9 - x^2)$

19.  $(x^2 - 25)$

20.  $(x^4 - 16)$

21.  $x^2 + 2xy + y^2$

22.  $x^2 - 2xy + y^2$

23.  $\frac{1 - x^2}{1 + x}$

24.  $\frac{6 - x}{36 - x^2}$

## Precal Assignment 25 – Trig Algebra

Rewrite each statement below as an equivalent reciprocal identity.

$$1. \frac{1}{\cos A} = \sec A$$

$$2. \frac{1}{\tan x} = \cot x$$

$$3. \frac{1}{\csc x} = \sin x$$

$$4. \frac{1}{\sin \theta} = \csc \theta$$

Rewrite each Pythagorean identity statement to produce two equivalent subtraction statements.

$$5. \sin^2 \theta + \cos^2 \theta = 1$$

$$6. \cot^2 \theta + 1 = \csc^2 \theta$$

$$7. \tan^2 A + 1 = \sec^2 A$$

Simplify each expression completely.

$$8. \frac{\sin^2 \theta}{\sin \theta}$$

$$9. \frac{\cos A}{\cos^3 A}$$

$$10. \frac{\tan^4 x}{\tan^2 x}$$

$$11. \frac{\csc^3 \theta}{\csc \theta}$$

$$12. \frac{\sec^2 A}{\sec^2 A}$$

$$13. \frac{\frac{\sin x}{\cos x}}{\frac{1}{\cos x}}$$

$$14. \frac{\frac{1}{\sin x}}{\frac{\cos x}{\sin x}}$$

$$15. \frac{\frac{1}{\cos A}}{\frac{\sin^2 A}{\cos^2 A}}$$

$$16. \frac{1 + \frac{\cos^2 x}{\sin^2 x}}{\frac{1}{\sin^2 x}}$$

$$17. \frac{\frac{1}{\cos^2 x} - 1}{\frac{\sin^2 x}{\cos^2 x}}$$

$$18. \frac{\frac{1}{\sin \theta} - \frac{\cos \theta}{\sin \theta}}{\frac{\cos^2 \theta}{\sin^2 \theta}}$$

$$19. \frac{\sec^3 x}{\sec x}$$

$$20. \cot A \cdot \cot A$$

$$21. \tan \theta \cdot \tan^3 \theta$$

$$22. \sec x(\sec x - \cos x)$$

$$23. \cot x \cdot \frac{1}{\cot x}$$

$$24. \sin^2 A \cdot \frac{1}{\sin A}$$

$$25. \csc \theta \cdot \frac{\sec \theta}{\csc^2 \theta}$$

$$26. \frac{\sin x}{\cos x} \cdot \frac{\cos x}{\sin^2 x}$$

$$27. \frac{\sqrt{\sin^2 A}}{\sqrt{\cos^2 A}}$$

$$28. (\csc A + 1)(\csc A - 1)$$

$$29. (\sec \theta + \tan \theta)(\sec \theta - \tan \theta)$$

$$30. (\csc \theta - \cot \theta)(\csc \theta + \cot \theta)$$

$$31. (\sec A + 1)(\sec A - 1)$$

32.  $(\csc \theta - 1)(\csc \theta + 1)$

33.  $(\sin A + \cos A)(\sin A - \cos A)$

34.  $(1 - \cos \theta)(1 + \cos \theta)$

35.  $(\sec A)(\sec A - \cos A)$

36.  $(\sin A - \cos A)^2$

37.  $(\sin A + \cos A)^2$

38.  $(1 + \tan A)^2$

39.  $(\cot \theta - 1)^2$

Factor and simplify completely.

40.  $\frac{1 - \sin^2 \theta}{\sin^2 \theta - \cos^2 \theta}$

41.  $1 - \cos^2 \theta$

42.  $\sec^2 \theta - 1$

43.

44.  $\frac{\sec^2 \theta - \tan^2 \theta}{\sin^4 A - \cos^4 A}$

45.  $\csc^2 \theta - \cot^2 \theta$

46.  $\csc^2 x - 1$

47.

48.  $\sin^2 x + 2 \sin x \cos x + \cos^2 x$

49.  $\sin^2 x - 2 \sin x \cos x + \cos^2 x$

50.  $\frac{1 - \sin^2 \theta}{1 + \sin \theta}$

51.  $\frac{1 - \cos^2 A}{1 - \cos A}$

52.  $\frac{\sec^2 A - 1}{\sec A + 1}$

## Precal Assignment 26 – Using Basic Identities

Simplify

1.  $\cot \theta \cdot \sin \theta$

2.  $\cos \theta \cdot \csc \theta$

3.  $1 - \sin^2 \theta$

4.  $\csc^2 \theta - 1$

5.  $\frac{\cot \theta}{\csc \theta}$

6.  $\sec^2 \theta \cdot \cot^2 \theta$

7.

$\cos \theta \cdot \csc \theta \cdot \sin \theta \cdot \sec \theta$

8.  $\frac{\cos^2 \theta + \sin^2 \theta}{\sin^2 \theta}$

9.  $\cos \theta (\sec \theta - \cos \theta)$

10.  $\frac{1 + \cot^2 \theta}{\cot^2 \theta}$

11.  $\frac{\cos \theta}{\sec \theta} + \frac{\sin \theta}{\csc \theta}$

12.  $\cos^2 \theta + \sin^2 \theta + \cot^2 \theta$

13.  $\sin \theta \cdot \csc \theta + \tan \theta \cdot \cot \theta$

14.  $\sin \theta \cdot \csc \theta - \frac{\sin \theta}{\csc \theta}$

15.  $\sin^4 \theta - \cos^4 \theta$

16.  $\frac{\sqrt{\sec^2 \theta - 1}}{\sqrt{\csc^2 \theta - 1}}$

17.  $(1 + \cos \theta)(\csc \theta - \cot \theta)$

18.  $(\sin \theta + \cos \theta)^2 + (\sin \theta - \cos \theta)^2$

## Precal Assignment 27 – Using Basic Identities

Simplify

1.  $\sin\theta \cdot \sec\theta$

2.  $\frac{\tan\theta}{\sec\theta}$

3.  $\tan^2\theta \cdot \csc^2\theta$

4.  $\frac{\tan^2\theta}{\sec^2\theta - 1}$

5.  $\sin\theta(\csc\theta - \sin\theta)$

6.  $\csc\theta - \cos\theta \cot\theta$

7.  $\frac{1 + \tan^2\theta}{\tan^2\theta}$

8.  $\frac{\sec\theta}{\cos\theta} - \frac{\tan\theta}{\cot\theta}$

9.  $\csc^2\theta - \cot^2\theta + \tan^2\theta$

10.  $\cot\theta \tan\theta - \sec\theta \cos\theta$

11.  $\frac{\cos\theta}{\sec\theta} + \frac{\sin\theta}{\csc\theta}$

12.  $\cos^2\theta + \sin^2\theta + \cot^2\theta$

13.  $\sin\theta \cdot \csc\theta + \tan\theta \cdot \cot\theta$

14.  $\frac{1 - \cos^2\theta}{1 - \cos\theta} - 1$

15.  $\sec^4\theta - \tan^4\theta$

16.  $\frac{\sin\theta \cos\theta}{1 - \cos^2\theta}$

17.  $\frac{\sqrt{1 - \sin^2\theta}}{\sqrt{1 + \tan^2\theta}}$

18.  $(2 - \cot\theta)^2 + (1 + 2\cot\theta)^2$