SM3 Unit 12 Review

Show each step in solving the problems below. In the blank provided, give the name of the property used.

1) $2[3 - 2(1)] + 18 \div 6$

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2) $6(3) - 4 + 2(21 \div 7 + 7)$

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Fill in the correct reasons for each step in the proof below.

3) Given: $4x + 12 = 8x - 8$
    Prove: $x = 5$

Statements	Reasons
a. $4x + 12 = 8x - 8$	a. Given
b. $12 = 4x - 8$	b.
c. $20 = 4x$	c.
d. $5 = x$	d.
e. $x = 5$	e.

Write a two-column proof.

4) Given: $2(3x + 6) = 8x - 4$
    Prove: $x = 8$

Statements	Reasons

Factor completely.

5) $x^2 + 5x - 6$

6) $x^2 - 2x - 48$

7) $2n^2 + 4n - 16$

8) $5x^2 + 8x - 21$

9) $16x^2 - 9$

10) $25n^2 - 1$

Use two columns to prove each identity.

11) $\sin\theta \cot\theta = \cos\theta$

12) $\cos\theta \tan\theta = \sin\theta$

13) $\sin\theta \cot\theta \tan\theta = \dfrac{1}{\csc\theta}$

14) $\tan^2\theta \cos^4\theta = \sin^2\theta \cos^2\theta$

15) $\dfrac{\sin^2 \theta - 2\sin \theta - 48}{\sin^2 \theta - 36} = \dfrac{\sin \theta - 8}{\sin \theta - 6}$

16) $\dfrac{\cos^2 \theta + \sin^2 \theta}{\sin^2 \theta} = \cot^2 \theta + 1$

17) $\tan \theta + \sec \theta = \dfrac{\sin \theta + 1}{\cos \theta}$

18) $2\cos^2 \theta - 1 = 1 - 2\sin^2 \theta$

19) $2 + 2\cot^2 \theta = 2\csc^2 \theta$

20) $\dfrac{\cos^2 \theta - 1}{\cos \theta} = -\dfrac{\sin^2 \theta}{\cos \theta}$

21) $\sin^4 \theta - \cos^4 \theta = \sin^2 \theta - \cos^2 \theta$

22) $(1 - \cot \theta)^2 = \csc^2 \theta - 2 \cot \theta$

23) $\dfrac{\cos^2 \theta}{1 - \sin \theta} = 1 + \sin \theta$

24) $\dfrac{1}{1 - \cos \theta} - \dfrac{1}{1 + \cos \theta} = \dfrac{2 \cos \theta}{\sin^2 \theta}$