Name: Date:
Instructor: Section:

Practice Set 5.6

Use the choices to fill in each blank.

$a^3 - b^3$	factored	sum	$(a + b)^2$
$a^3 + b^3$	added	difference	$(a - b)^2$

1. The sum of two squares, $a^2 + b^2$, cannot be _____ over the real numbers.

2. The _____ of two cubes formula states _____ $= (a - b)(a^2 + ab + b^2)$.

3. The _____ of two cubes formula states _____ $= (a + b)(a^2 - ab + b^2)$.

4. A perfect square trinomial factors as follows: $a^2 + 2ab + b^2 = $ _____.

5. A perfect square trinomial factors as follows: $a^2 - 2ab + b^2 = $ _____.

Use the difference of two squares formula and the perfect square trinomial formula to factor each polynomial.

6. $x^2 - 49$ 7. $36x^6 - 49y^2$ 6._____

                                                          7._____

8. $3x^6 - 75y^4$ 9. $(y - 3)^2 - 16$ 8._____

                                                          9._____

10. $9 - 16y^4$ 11. $x^2y^2 - 144z^2$ 10._____

                                                         11._____

12. $\dfrac{1}{81}x^2 - \dfrac{1}{100}$ 13. $\dfrac{4}{9}x^2y^2z^2 - \dfrac{36}{49}$ 12._____

                                                         13._____

14. $x^2 - 14x + 49$ 15. $x^2 - 12x + 36$ 14._____

                                                         15._____

16. $9x^4 - 42x^2 + 49$ 17. $16x^2 - 40xy + 25y^2$ 16._____

                                                         17._____

18. $(a + b)^2 + 14(a + b) + 49$ 19. $(x - y)^2 + 18(x - y) + 81$ 18._____

                                                         19._____

20. $x^2 - 10x + 25 - y^2$ 21. $4a^4 - 20a^2b + 25b^2 - 9$ 20._____

                                                         21._____

Factor using the sum or difference of two cubes formula.

22. $x^3 - 27$ 23. $8x^3 + 125y^6$ 22._____

23._____

24. $81 - 3x^3$

25. $16x^6 - 54y^3$

24._____

25._____

26. $w^3 - 343$

27. $y^6 + 729$

26._____

27._____

28. $(x - 1)^3 - 27$

29. $(y + 3)^3 + 8$

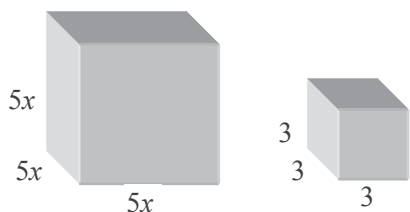**28.**_____

29._____

Find an expression, in factored form, for the difference of the volumes of the two cubes.

30.

30._____

5x

5x

5x

3

3

3

Find an expression, in factored form, for the sum of the volumes of the two cubes.

31.

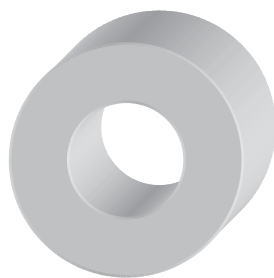**31.**_____

7a

7a

7a

3b

3b

3b
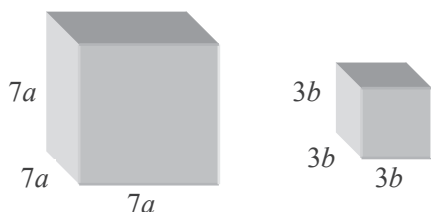
Write an expression, in factored form, for the volume of the shaded ring.

32. $V = \pi r^2 h$
  a = radius of outside circle
  b = radius of inside circle
  c = height of cylinder

32._____

Angel/Runde, *Intermediate Algebra for College Students,* 9e