

## Extending Number System Test REVIEW

**Simplify.**

1)  $\sqrt{24}$   
 $2\sqrt{6}$

2)  $-8\sqrt{18}$   
 $-24\sqrt{2}$

3)  $7\sqrt{20}$   
 $14n^2\sqrt{5}$

4)  $7\sqrt{448}$   
 $56k^2\sqrt{7hj}$

5)  $2\sqrt{2} - \sqrt{2} - 2\sqrt{2} - \sqrt{3}$   
 $-\sqrt{2} - \sqrt{3}$

6)  $\sqrt{8} + \sqrt{2}$   
 $3\sqrt{2}$

7)  $2\sqrt{18} + 3\sqrt{8}$   
 $12\sqrt{2}$

8)  $-\sqrt{27} - \sqrt{45} - \sqrt{27}$   
 $-6\sqrt{3} - 3\sqrt{5}$

$$9) -4\sqrt{20} \cdot \sqrt{5}$$
$$-40$$

$$10) -5\sqrt{5} \cdot 2\sqrt{5}$$
$$-50$$

$$11) \sqrt{6}(-3\sqrt{2} - 4\sqrt{6})$$
$$-6\sqrt{3} - 24$$

$$12) \sqrt{6}(\sqrt{3} + \sqrt{5})$$
$$3\sqrt{2} + \sqrt{30}$$

$$13) (-5\sqrt{5} - 1)(\sqrt{5} + 5)$$
$$-30 - 26\sqrt{5}$$

$$14) (2\sqrt{3} + 2)(\sqrt{3} - 2)$$
$$2 - 2\sqrt{3}$$

$$15) (-4\sqrt{3} - 2)(5\sqrt{3} - 3)$$
$$-54 + 2\sqrt{3}$$

$$16) (-1 + \sqrt{3})(-5 + \sqrt{3})$$
$$8 - 6\sqrt{3}$$

**Determine if the result is a rational or irrational number and explain why.**

$$17) -2\sqrt{45} + 3\sqrt{20}$$
$$0$$

$$18) \sqrt{6}(\sqrt{6} + 3)$$
$$6 + 3\sqrt{6}$$

**Simplify each expression.**

$$19) (4 - 2n^4 + 8n) + (8n^5 - 2n^3 + 3 + 4n^2) + (3n^3 - 6n^5)$$
$$2n^5 - 2n^4 + n^3 + 4n^2 + 8n + 7$$

$$20) (5x^5 + 5x^4) - (-6x^4 + 3x^5)$$
$$2x^5 + 11x^4$$

$$21) (2 - 7m^2 - 7m^4 - 7m) + (-7m^2 - 5 + 4m - 5m^4) - (4m + 7m^2 - 1 + 3m^4)$$
$$-15m^4 - 21m^2 - 7m - 2$$

**Find each product.**

$$22) 5(4n - 1)$$
$$20n - 5$$

$$23) (6n + 8)(3n + 2)$$
$$18n^2 + 36n + 16$$

$$24) (6a - 2)(5a - 4)$$
$$30a^2 - 34a + 8$$

$$25) (7p + 7)(6p + 5)$$
$$42p^2 + 77p + 35$$

$$26) (4n + 7)(8n^2 + 4n - 1)$$
$$32n^3 + 72n^2 + 24n - 7$$

$$27) (8v - 2)(7v^2 + 6v + 2)$$
$$56v^3 + 34v^2 + 4v - 4$$

$$28) (8x - 1)(6x^2 - 3x + 6)$$
$$48x^3 - 30x^2 + 51x - 6$$

$$29) (3x + 3)(7x^2 + 4x + 2)$$
$$21x^3 + 33x^2 + 18x + 6$$

$$30) (-3v^2 + 8v - 6)(-7v^2 - 4v - 4)$$
$$21v^4 - 44v^3 + 22v^2 - 8v + 24$$

$$31) (-5r^2 - r + 7)(8r^2 - 2r + 4)$$
$$-40r^4 + 2r^3 + 38r^2 - 18r + 28$$

$$32) (-6v^2 + v - 6)(-4v^2 - 8v - 3)$$
$$24v^4 + 44v^3 + 34v^2 + 45v + 18$$